



# Material Safety Data Sheet

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

**Product name:** ANFO

**Synonyms:** Ammonium nitrate/fuel oil

**CAS-No:**

**Molecular Formula:**

**Supplier:** Orica-Nitro Explosives Manufacturing CO.

**ACN**

**Address:** Hülya Sok. No:45 06700 G.O.P. – Ankara, TURKEY

**Telephone:** +90 312 8651963

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**Emergency telephone number:** +90 312 8651963

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Recommended use:** Blasting explosive.

**Appearance:** Granular off-white or pinkish solid with slight kerosene-like odour.

CHEMICAL ENTITY	CAS NO.	PROPORTION
Ammonium nitrate	6484 – 52 - 2	VHIGH
Fuel oil	68334-30-5	LOW
Red dye (in some formulations)	-	VLOW
PROPORTION (% weight per weight)	-	DÜŞÜK

VHIGH >60, HIGH 30-60, MED 10-29, LOW 1-9, VLOW <1  
All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 3. HAZARDS IDENTIFICATION

Classified as Dangerous Goods for the purpose of transport by road or rail. Refer to relevant regulations for storage and transport requirements.

**Class** 1.1 D Explosive

**Poisons Schedule (Aust)/Toxic Substance (NZ):** N/A- Not Applicable

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**Product name:** ANFO

**Substance Key:** 00022013201

**Issued:** 01.05.1995

**Version :** 1.0

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## 4. FIRST AID MEASURES

**Ingestion:** Rinse mouth with water. Give water to drink. Do NOT induce vomiting. Seek immediate medical assistance.

**Eye contact:** Immediately irrigate with copious quantities of water for at least 15 minutes. Eyelids to be held open. Remove clothing if contaminated and wash skin. Seek immediate medical assistance.

**Skin contact:** Where possible wipe material from skin then wash contaminated skin with plenty of soap and water. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.

**Inhalation:** Remove victim from exposure -avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through a facemask. For all but the most minor symptoms arrange for patient to be seen by a doctor as soon as possible, either on site or at the nearest hospital.

**Notes to physician:** Contains ammonium nitrate (94%) and a hydrocarbon solvent - fuel oil (6%). For Ammonium Nitrate: Clinical Findings: The smooth muscle relaxant effect may lead to headache, dizziness and marked hypotension. Cyanosis is clinically detectable when approximately 15% of the haemoglobin has been converted to methaemoglobin (ie. ferric iron). Symptoms such as headache, dizziness, weakness and dyspnoea occur when methaemoglobin concentrations are 30% to 40%: at levels of about 60%, stupor, convulsions, coma and respiratory paralysis occur and the blood is a chocolate brown colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methaemoglobin in blood. Treatment: 1. Give 100% oxygen. 2. In cases of a) ingestion: use gastric lavage b) contamination of skin (unburnt or burnt): continue washing to remove salts 3. Observe blood pressure and treat hypotension if necessary 4. When methaemoglobin concentrations exceed 40% or when symptoms are present, give methylene blue 1 to 2mg/kg body weight in a 1% solution by slow intravenous injection. If

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cyanosis has not resolved within one hour a second dose of 2mg per kg body weight may be given. The total dose should not exceed 7mg per kg body weight as unwanted effects such as dyspnoea, chest pain, vomiting, diarrhoea, mental confusion and cyanosis may occur. Without treatment methaemoglobin levels of 20-30% revert to normal within 3 days. 5. Bed rest is required for methaemoglobin levels in excess of 40%. 6. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue. 7. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from blood if the condition of the patient is unstable. 8. Following inhalation of oxides of nitrogen (decomposition product following heating) the patient should be observed in hospital for 24 hours for delayed onset of pulmonary oedema. Further observation for 2-3 weeks may be required to detect the onset of the inflammatory changes of bronchiolitis fibrosa obliterans.

### 5. FIRE-FIGHTING MEASURES

**Specific hazards:** Explosive material. Avoid all ignition sources.

**Fire fighting further advice:** Explosive solid. In case of a small fire, if actual explosive is not burning, carefully remove as much explosive as possible to a safe distance. However, if explosive burning, evacuate area immediately. DO NOT fight fire. On burning under confined or semi-confined conditions, some oxides of nitrogen and/or carbon monoxide will be present. Brown fumes indicate the presence of toxic oxides of nitrogen.

### 6. ACCIDENTAL RELEASE MEASURES

Clear area of all unprotected personnel. Shut off all ignition sources. In the case of a transport accident notify the City Police Or gendarme and Orica – Nitro Explosives Manufacturing CO. (tel. +90 312 446 16 00 - 24 hour service)

### 7. HANDLING AND STORAGE

**Storage:** Explosives shall not normally be carried on the same vehicle with dangerous goods of other classes, however exemptions may apply. Store premixed material in a well ventilated magazine suitably licenced for IMCO Class 1.1 D Explosives. DO NOT subject the product to impact, friction **Page: 3/6**

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between hard surfaces or to any form of heating. Store away from sources of heat or ignition.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

#### National occupational exposure limits

No value assigned for this specific material by the National Occupational Health and Safety Commission

**Engineering measures:** Use in well ventilated area. Avoid generating and inhaling dusts.

**Personal protection equipment:** Oica Personal Protection Guide No.1, 1998: B-OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVE (S).

Avoid eye contact and repeated or prolonged skin contact. Wear overalls, safety glasses and impervious gloves.

Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and protective equipment before storing or re-using.

### 9. PHYSICAL AND CHEMICAL

**Form / Colour / Odour:** Granular off-white or pinkish solid with slight kerosene-like odour. Solubility: Partially soluble in water.

**Specific Gravity:** 0.8 @

**Relative Vapour Density:** 1 @

**Rel Vapour Density (air=1):** N Av

**Melting Point (C):** N Av

**Vapour Pressure (20 C):** N Av

**Decomp. point (C) :** N Av

**Flash Point (C):** > 61 \*

**Sublimation Point:** N App

**Flammability Limits (%):** N App

**PH :** N App

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**Auto-ignition Temp (C):** N Av

**Viscosity:** N App

**% Volatile by volume:** N Av

**Evaporation Rate:** N Av

**Solubility in water (g/L):** N Av

(n-Butyl acetate=1)

(Typical values only -consult specification sheet)

N Av = Not available N App = Not applicable

\* The Flash point of ANFO will be equivalent to the Flash Point of the fuel oil component.

## 10. STABILITY AND REACTIVITY

**Stability:** Detonation may occur from heavy impact or excessive heating - particularly under confinement. Avoid all contact with other chemicals.

## 11. TOXICOLOGICAL INFORMATION

**Main symptoms:** No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled are:

**Ingestion:** Swallowing can result in nausea, vomiting, mild gastric irritation, headaches and dizziness. Eye contact: A moderate eye irritant.

**Skin contact:** Contact with skin may result in irritation. Fuel oil component will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis.

**Inhalation:** Both the dust from material and the vapour of fuel oil are irritants to mucous membranes and respiratory tract. Inhalation of vapour can result in headaches, dizziness and possible nausea. Blasting occasionally results in a toxic brown gas of oxides of nitrogen. Inhalation may result in chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed. Absorption of ammonium nitrate by ingestion, inhalation or through burnt or broken skin may cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia.

**Long Term Effects:** No data found.

**Acute toxicity / Chronic toxicity**

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No LDSO data available for product, however:

Oral LDSO (rat): 2217 mg/kg (ammonium nitrate) (1)

Under untreated circumstances overexposure to nitrates may lead to methaemoglobinaemia. (2)

Repeated or prolonged exposure to hydrocarbon solvents (including fuel oil) can result in dizziness, weakness, and nervous system effects. The components in the proportions present are not considered to represent a hazard under conditions of good occupational work practice.

### 12. ECOLOGICAL INFORMATION Avoid contaminating waterways.

Avoid contaminating waterways.

### 13. DISPOSAL CONSIDERATIONS

Small quantities of damaged or deteriorated explosive may be destroyed by inclusion in a blast hole containing good explosives.

For large quantities of damaged or deteriorated explosives notify Orica-Nitro Explosives Manufacturing CO:

### 14. TRANSPORT INFORMATION

Classified as Dangerous Goods for the purpose of transport by road or rail. Refer to relevant regulations for storage and transport requirements.

**UN-No:** 0082

**Class:** 1.1 D Explosive

**Hazchem code:** E

**Proper shipping name:** EXPLOSIVE, BLASTING, TYPE B

### 15. REGULATORY INFORMATION

**Poisons Schedule (Aust)/Toxic Substance (NZ):** N/A- Not Applicable