

- IDENTIFICATIONCommercial identification:**EXPLOSIVE FUEL NITRATE TYPE
ANFOTITE 1+ - ANFOTITE 2+
ANFOTITE 2+VSF - ANFOTITE 3+**Chemical identification: without purpose, mixtureSupplier: TITANOBELRue de l'industrie 21270 PONTAILLER SUR SAÔNE
Phone: 33.3.80.47.67.10 – Fax : 33.3.80.47.67.11
Cie: 21270 VONGES – Fax : 33 3.80.47.23.24
Emergency call: 33 3.80.47.23.23Emergency call from approved organization (INRS) :
33.1.45.42.59.59 (ORFILA)E-Mail address of the person in charge and competent for this SDS
emmanuel.martin@titanobel.com

Trade name	CE type attestation number	Agreement n°
ANFOTITE 1+	0080.EXP.00.0056	XN 336F
ANFOTITE 2+	0080.EXP.97.0017	XN 065 F
ANFOTITE 2+ VSF	0080.EXP.02.0055	XN 481 F
NR 20	0080.EXP.01.0006	XN 326 F
NR 10	0080.EXP.01.0007	XN 325 F
ANFOTITE 3+	0080.EXP.97.0018	XN 153 F

Use of the product: these nitrate fuel are explosives mainly used in knocking down of rocks in quarries, mines and public labor work. (SU2a: i.e.: mine concern)

VI index n°: without purpose

CAS n°: without purpose

REACH record n°: without purpose (mixture)

2 - HAZARD IDENTIFICATION

Danger of mass explosion, affecting almost the entire load practically instantaneously. In case of fire, risk of violent reaction with possible emission of harmful gases (nitrogen oxides NOx and carbon monoxide)

- accidental contact with eyes: irritation

- contact with skin: redness and inflaming

- Although nitrate fuel explosives hardly burn, it is recommended not to subject these products to an intense heat, flames or any source of spark.

- Classification of these explosivesClassification in risk division 1.1 compatibility group D according to decree dated April 20th, 2007, modified- Hazard pictogramsE : Explosive - **risk of explosion by shock, friction, fire or other sources of ignition**- Hazard statementsH201: explosive ; **mass explosion**

H319: Causes serious eye irritation

H351: may cause cancer

H412: harmful for aquatic organisms and toxic to aquatic life with long lasting effects.

3 - COMPOSITION/INFORMATION ON THE INGREDIENTS

Dangerous matter contained in the mixture	Rate	Hazard symbol	N° CAS	N° EINECS	Hazard statements
- ammonium nitrate	> 85 %	O	6484-52-2	229-347-8	H272, H319
- Fuel - gazole		N, Xn	94114-59-7	266-235-8	H226, H332, H315, H351, H304, H411, H373
- Aluminum granules for Anfotite 3+			7429-90-5	231-072-3	

- Meaning of the hazard pictogramsO : Oxidant - **contact with combustible material may cause fire**

N: harmful for environment

Xn: noxious/harmful

H272: may intensify fire ; oxidizer**H319 : causes serious eye irritation**H226: **flammable** liquid and vapors - class 3

H332: toxic by inhalation, acute toxicity : inhalation - class 4

H315: cause skin irritation, skin corrosion/skin irritation - class 2

H351: may cause cancer

H304: can be lethal in case of ingestion and penetration in respiratory track, aspiration hazard - class 1

H411: toxic for aquatic organisms, occur long lasting effects

H373: specific toxicity for some target organisms - repeated exposure

Codes for the hazard statements**4 - FIRST AID****4.1 - General advice**

In any case, see immediately a doctor

In case of fire , symptoms appear that may be bound to inhalation of combustion gases

Bring the person outside the contaminated area

If possible, give a dexamethasone spray for inhalation

If necessary, give some oxygen
 In case of fainting, lay out and carry the person in a lateral stable position
 In case of breathing stop, practise the artificial breath.
 After aspiration of dusts, carry the wounded person outside to get fresh air, not polluted
 If symptoms persist, for example caught see a doctor
 Persons who breath combustion gases do not necessary present immediately some intoxication symptoms
 Patients must leave at least 48 hours under control

4.2 - In case of skin contact

Wash with water and if necessary see a doctor

4.3 - In case of eye contact

In case of contact with eyes, wash immediately and rinse abundantly with water separating the eyelids during at least 15 minutes and consult a specialist

4.4 - If swallowed, do not give something to drink

4.5 - Protection of rescuers: avoid extended contact with skin and dust inhalation

5 - FIRE FIGHTING MEASURES

5.1 - General indications

**This product is an explosive ; keep unauthorized persons away
 Warn neighborhood announcing risk of explosion**

5.2 - Extinction method nearly (the product is still not touched)

Fight against fire with all available ways (water, dry powder extinguishing, etc...)

In any case, avoid the fire reaches the product / material

When needed, drive all vehicles away from the fire

5.3 - Measures to take in case of fire on the product (the fire reaches the product or is going to)

Do not try to extinguish the fire, risk of explosion!

Evacuate immediately the dangerous area and look for shelter

Inform the neighbors about the risk of explosion

5.3.1 - Adapted extinguish way

Do not try to extinguish the fire, risk of explosion!

5.3.2 - Extinguish ways not to use against fire because of safety no purpose

5.4 - Specific dangers bound to the mixture, its combustion products or gases

In addition to the explosion danger, in case of fire or heat, dangerous harmful gases emanation and vapor; as well as development of pyrolysis products, for example, carbon monoxide, nitrogen oxides (nitrated gases), ammoniac, must be expected

Don't breathe the gases / vapor / fumes of the explosion and/or the fire. Risk of development of harmful œdema on lung

Extinguish way:

Possibility by flooding with big quantity of water in case of the beginning of fire.

In case of fire of the product in the warehouse or during the transport: do not intervene, but quickly go far from the fire and close the accesses.

Note: protection of persons who intervene: isolating respiratory devices because of the emission of harmful gases (nitrogen oxides NOx and carbon monoxide).

6 - ACCIDENTAL RELEASE MEASURES

6.1 - Avoid contact with the unpackaged product with skin and eyes

6.2 - Personal precautions

Collect carefully and with adapted individual protection (see § 8)

6.3 - Environmental precaution

In case of accidental spreading, do not leave the widespread product. Do not discharge to dumps or sewers

6.4 - Cleaning up methods

Carry out in a packaging recommended by **the supplier** (see § 14) respecting all safety measures bound to manipulation and write on the new packaging the identification of the product. Then, sweep meticulously the ground.

In case of some particular problem **or when in doubt**, contact **the supplier**.

7 - HANDLING AND STORAGE

7.1 - Handling

Technical measures and precautions: during these operations, keep the product away from heat, flames and sparks, avoid any impact or friction. It is strictly forbidden to smoke and to use naked fires.

Using advice: avoid contact with incompatible matters (see paragraph 10). Avoid contact with eyes.

7.2 - Storage

Technical measures: eliminate defect packaging

Storage conditions: packaging must be piles in a stable way shielded from bad weather at a temperature comprised between -20° C and +50° C

Storage period: in standard storage conditions (especially shielded from bad weather) and although there is no limit of preservation imposed, it is recommended to use these explosives within 12 months following the date of production

Incompatible matters: do not store with products out of class 1 as well as products from class 1 but which compatibility group would be different from D or S.

Packaging material: the storage will be made in packaging recommended by Titanobel indicating the maximum net weight specified (see § 14)

7.3 - Specific end use(s)

Comply with **existing laws** (see paragraph 15) and the technical sheet of the product

8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 - V. L. I. without purpose

8.2 - V. L. E. P.

Nothing to point out in usual using conditions. Nowadays, no exposure limit value for ammonium nitrate and aluminum granules

8.3 Individual protection equipment

- Protection of the eyes: glasses recommended
- Protection of the body: suitable clothes and leather gloves
- Specific hygiene measures: do not eat, drink with contaminated hands.

9 - PHYSICAL AND CHEMICAL PROPERTIES9.1 - Appearance / odor

The explosive looks like a granular solid with an average diameter of 2 mm

- Color of the mixture: beige for Anfo1, Anfo2, Anfo2+VSF and grey for Anfo3+
- Odor : odor of fuel
- Specific temperatures for change of physical state:

Melting of pure ammonium nitrate at nearly +170° C with a beginning of decomposition

- Flash point: no purpose

9.2 - Important safety indications and sanitary and environment protection

Real acidity value (pH)	not applicable
Melting point / Freezing point	not applicable
Initial boiling point/boiling range	not applicable
Flammability	not applicable
Explosion risk	can explode, especially with impurities, firing inclusion or strong heat
Burning characteristic	not applicable
Vapor pressure	not applicable
Partition coefficient (n,-octanol/eau)	not applicable
Viscosity	not applicable
Vapor density	not applicable
Vaporization speed	not applicable
Solubility	soluble in water

9.3 - Pyrotechnical Safety Characteristic

Auto-inflammation's temperature by progressive heating:

Test SNPE 47 (PV/47/14/03/002) (GEMO FMD - 051 - A - 1)	Fumes at 200° C Anfortite 3+
Packing Density, Anfortite 3, test CSE 11.1/B1	0.90

Behavior of explosive in bulk:

- Sensitivity to friction

Test SNPE 16 (GEMO FMD - 040 - A - 1) (CSE 3.51/J1)	0 % positive knocks at 353 N Anfortite2+, Anfortite 3+
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- Sensitivity to shock drop weight 30 kg

Test SNPE 14 (CSE 3.41/I1 (GEMO FMD-010-A-1) 10 % positive knocks maximum (50 J) Anfortite2+

Outdoors explosion in gutter	hard combustion on 10 cm that stops after 5 min
Test SNPE 20 (GEMO FMD-061-A-1) (CSE 3.21/L1)	Anfortite3+
Sensitivity to firing: test CSE 3.73/P3	Sensitive to detonator 0.6g of Pentrite (Anfortite2+, Anfortite 3+)
Apparent volumic mass	800 to 950 kg/m ³

10 - STABILITY REACTIVITY10.1 - Conditions to avoid

Mechanical influences (for ex. shock, crushing, friction, collision)

Fire, sparks or any other sources of ignition

Temperatures over 50° C

Contact with substances pointed out in paragraph 10.4

10.2 - Chemical stability

In normal storage conditions, the product is stable chemically. However, in case of an anomaly in appearance or behavior of the explosive (gazing freeing, strong odor, significant segregation, warming), the product must be isolated and the anomaly has to be immediately pointed out to the technical department of Titanobel

10.3 - Harmful decomposition products

In the event of fire and/or failure to comply with some of the following prescriptions: possibility of freeing of nitrogen oxides and carbon monoxide

10.4 - Incompatible materials

Avoid contact with alkalis, amines, strong acids, alkaline metals, copper, zinc and washing powders. Do not store with products out of class 1 as well as with products from class 1 which compatibility group would be different from D or S.

10.5 - Warning

Pay particular attention to the increase of sensitivity to shock or friction of this explosive especially when it is dry.

11 - TOXICOLOGICAL INFORMATION

11.1 - Acute toxicity: until this day, no evaluation has been made on the mixture

11.2 - Exposure way: Ingestion, inhalation, eyes and skin

11.3 - Acute effects / symptoms

Following symptoms have been pointed out:

<u>For fuel</u>	<u>For ammonium nitrate</u>
- Weakly inflaming to skin	- Irritating to skin
- Weakly inflaming to eyes	- Irritating to eyes

11.4 - Chronicle effect

After exposure/prolonged or repeated contact: eruption or dermatosis

11.5 - Substances/ individual components

Ammonium Nitrate

Oral acute toxicity (LD₅₀, rat (mg/kg)) = 2217

Dermal acute toxicity (LD₅₀, rat (mg/kg)) > 5000

Weakly irritation/caustic effect (for skin and eyes)

After ingestion, gastro-intestinal trouble, possibly development of methemoglobine after reduction (desoxidation) from nitrate in nitrite, cyanosis.

12 - ECOLOGICAL INFORMATIONS, until this day, no evaluation has been made on the mixture

Until this day, no evaluation has been made on the mixture

12.1 - Ecotoxicity

Ammonium nitrate:

Toxicity for fishes: mainly depending on the real acidity value (pH) and the kind of fish

LC₅₀ = 74 mg/l/48 h (Cyprinus carpio)

Toxicity for water flea:

EC₅₀ = 555 mg/l/ (Daphnia magna)

Toxicity for algae:

EC₅₀ = 83 mg/l/ (Scenedesmus quadricauda)

Fuel/gasoil: toxic to aquatic organisms, may cause long- term adverse effects in the aquatic environment

12.2 - Persistence and degradability

The ammonium nitrate is a substance existing in an ionogene shape and also in the natural life cycles (for example nitrogen) and can easily transform in other elements of these life cycles. Nevertheless, see § 12.5 This fuel/gazole is biodegradable

12.3 - Potential of bioaccumulation

The potential bioaccumulation of the mixture is very low because those of the raw material is also very low

12.4 - Results of the evaluation of PBT's properties (persistent, bio-accumulable and harmful)

Until this day, no evaluation has been made

12.5 - Other harmful effects

Excessive supply of ammonium nitrate can bring eutrophisation of water and over fertilization of the ground. The handling of this substance must be imperatively carefully made. By care in handling this product and a using complying prescriptions, there will be no harmful effect possible

13 - DISPOSAL CONSIDERATION

Waste and residue

The product must not be abandoned, it must be collected in order to be evacuated in accordance with the recommendation stipulated in paragraph 6 the, stored under supervision according with recommendations stipulated in paragraph 7. If only a small quantity is involved, the recovered product can be destroyed after establishment of a particular register by the operator, by placing it in contact with primed charges

For significant quantities: consult the supplier's distribution depot who will supply with information of recovery conditions.

Do not mix up with other incompatible residue (see paragraph 10).

In any case, comply with the regulation in force. In the event of difficulties, it is advised to take contact with Titanobel.

This product has a strict time limit of one year after the date of production indicated on the packaging.

Soiled packaging

The packaging contaminated by traces of product will be carefully examined to check that they are empty and burn on the sites of use, nowadays' best technique (see BREF-OFC) in accordance with the safety instructions of the establishment, or shipped back to Titanobel according to the conditions defined between the two parties to be treated inside the destructions' channels.

14 - TRANSPORT INFORMATION

Classification for transport in recognized packaging

Official description for transport

MINE EXPLOSIVE (BLASTING) TYPE B

- road ways: RID et ADR	UN number 0082 - 1.1 D
- maritime ways: code IMDG	UN number 0082 -1.1 D
- aerial ways: classification OACI	forbidden to transport

Recognized packaging:

- Paper bag multi-folds resistant to water 5M2
- Maxi net weight: 25 kg
- Packaging method: P116

15 - REGULATORY INFORMATION

Symbol	E	Explosive
<u>Codes for the hazard statements</u>	H 201	Explosive, risk of mass explosion
	H 319	Cause serious eyes irritation
	H351	May cause cancer
<u>Precautionary statements</u>	P 210	Keep away from heat, hot surfaces /sparks/open flames/ other sources of ignition - No smoking
	P 250	Do not subject to grinding/shock/friction
	P 280	Wear protective gloves, protective clothing / eye protection / face protection
	P370+P380	In case of fire, evacuate the area
	P 372	Risk of explosion in case of fire
	P 373	In case of fire and/or explosion, do not breathe the fumes
	P302+P352	In case of contact with skin: wash thoroughly with water and soap
	P305+P351+P338	In case of contact with eyes: rinse carefully with water during several minutes. Keep off contact lens if the victim has some and if they can easily be removed. Go on rinsing.
	P 401	Store in accordance with regulations
	P 501	Eliminate the content/packaging by cremation in an installation according to regulations

EUROPEAN REGULATIONS

- ADR (transport regulation)**
- Directive 67/548/EEC (Dangerous substance Directive)**
- Directive 1999/45/EC (Dangerous preparation Directive)**
- Directive 2008/98/EC (Waste Framework Directive)**
- Regulation 1907/2006/EC (REACH)**
- Regulation 1272/2008/EC (CLP)**
- Directive 2014/28/UE**

National regulations for approval must be respected.

This list is not exhaustive and does not, in any case, dispense user from taking account of the whole official laws applying to his activity.

16 - OTHER INFORMATIONS / WARNING

This form fills up the technical manual of use but don't replace it. The information is based on our knowledge relative to the concerned product, at date which is indicated. They are given in good faith. The attention of the users is pointed out on the possible risks incurred when the product is used to other employment than those for which it is conceived.

Particularly, these products must be handled only by operators having knowledge of the explosives in accordance to regulation and the usual rules of trade; they are intended to be used as explosives for blasting rocks in mines, quarries and public works.

For any other use or particular use, Titanobel takes no responsibility,

It is up to the user under its own responsibility to do as follows:

- elaborate the safety measures regarding the use of the products taking in account especially the data of this form,
- reflect to all users and all handlers the adapted safety data and warn against the risks mentioned in the whole documentation relative to the use of these products.
- to make sure that the users who are going to handle/or use these products are trained to their use and their handle.

This enumeration must be in no case considered as exhaustive. It does not exonerate the recipient from checking that no other duty is prescribed by regulation other than those mentioned and especially those able to govern his own activity regarding possession and handling of explosives for which he is the only responsible.

The technical departments of Titanobel are at the disposal of the users to bring, within the limits of their knowledge assistance on the topics.

Advice: modifications facing the previous version appear in **bold characters**