



Moura, Silva & Filhos, S.A.
EXPLOSIVOS - PÓLVORAS - RASTILHOS

SAFETY DATA SHEET

in accordance with Reg. No. 1907/2006, as amended by Reg. 2020/878, of 18 June 2020

Base emulsion - Bulk
Revision 2: 2022/12/06
[replaces revision 1, of 2020/05/15]
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Product: Base Emulsion - Bulk

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/COMPANY

1.1 Product Identifier

Trade Name: Emulsion Base - Bulk

UN Number and Description: AMMONIUM NITRATE, IN EMULSION, used in the manufacture of solid blasting explosives

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Emulsion base intended for the production of civil explosive for rock blasting, after the addition of an activating agent.

Uses advised against: Any other use is advised against.

1.3 Details of the supplier of the safety data sheet

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1.4 Emergency telephone number

European Emergency Number: 112

ClAV – Poison Control Information Centre: +351 808 250 250

Helpdesks: <https://echa.europa.eu/support/helpdesks>

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

According to Regulation (CE) 1272/2008 of 16 December:

Hazard classes and categories:

Oxidising solid, category 2 (Ox. Sol. 2)

H272: May intensify fire; oxidiser.

Serious eye damage, category 1 (Eye dam. 1)

H318: Causes serious eye damage.

[The information regarding the classification of the mixture obtained after the addition of the activating agent, in the application with MEMU, can be consulted in the Safety Data Sheet of Emulsions - Class 1.5 D]

2.2 Label elements

According to Regulation (CE) 1272/2008 of 16 December:

Hazard Pictograms:



GHS03



GHS05

Signal word: Danger

Hazard warnings:

H272: May intensify fire; oxidiser.

H318: Causes serious eye damage.

Precautionary statements:

Prevention:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P220: Keep away from clothing and other combustible materials.

P280: Wear protective gloves (chemical resistant)/protective clothing/eye protection/face protection.

Response:

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P370 + P378: In case of fire: use water to extinguish.

Removal:

P501: Dispose of the contents/container in accordance with national regulations. (Decreto-Lei No. 102-D/2020, of 10 December, as amended)

Note: The label elements resulting from the requirements provided for in other community acts should be placed in the section of the label intended for supplementary information (see sections 14 and 15 for information relating to transport and explosive precursors).



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2.3 Other hazards

None of the substances present in the mixture in a concentration equal to or greater than 0.1% by mass fulfils the criteria for Persistent, Bioaccumulative and Toxic Substances or Very Persistent and Very Bioaccumulative substances in accordance with Annex XIII to Regulation 1907/2006, as amended. None of the substances present in the mixture at a concentration of 0.1% or more by weight have endocrine-disrupting properties.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL DESIGNATION	% (p/p)	CAS RN	EC No.	REACH REGISTRATION NUMBER	Regulation (EC) No 1272/2008	
					HAZARD CLASS	WARNINGS
Ammonium Nitrate in Solution	60 - 80	6484-52-2	229-347-8	01-2119490981-27-xxxx	Oxidizing liquid, category 3 (Ox. Liq. 3); Eye Irritation, Category 2	H272; H319
Calcium Ammonium Nitrate	6-10	15245-12-2	239-289-5	01-2119493947-16-xxxx	Acute toxicity (oral), category 4 (Acute Tox. 4 Oral); Serious eye damage, category 1 (Eye Dam. 1)	H302; H318
White mineral oil (petroleum) [paraffinic oil]	5-7	8042-47-5	232-455-8	01-2119487078-27-xxxx	Aspiration toxicity: category 1 (Asp. Tox. 1)	H304

Note: The remaining components of the mixture do not meet the criteria for classification.
(See full text of the hazard statements in section 16)

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact: Rinse the eyes with running water for at least 15 minutes, keeping the eyelids open. If you wear contact lenses, remove them before washing your eyes. Contact your doctor immediately.

Skin contact: Remove contaminated clothing carefully so as not to contaminate the eyes. Start immediate skin decontamination by washing with mild soap and water. Consult your doctor in case of skin irritation.

Ingestion: Oral exposure is quite unlikely. Do not induce vomiting. If the victim is conscious, rinse his mouth with water and give him water to drink. If the victim is unconscious, convulsive or has difficulty swallowing, never induce vomiting or give them fluids. Seek medical attention and show this Safety Data Sheet.

Inhalation: In the event of inhalation of gases resulting from the thermal decomposition of the product, its combustion, or the detonation of the explosive prepared in the MEMU, remove the victim from the contaminated area, move him to a clean air zone and keep him at rest. Consult your doctor if you have any symptoms.

4.2 Most important symptoms and effects, both acute and delayed

Product Exposure: Eye Injury/irritation.

Exposure to gases resulting from the thermal decomposition of the product, its combustion, or the detonation of the prepared explosive: Methemoglobinemia, pulmonary oedema, dermal irritations and irritation of the eyes, mouth, throat and other affected tissues.

4.3 Indication of any immediate medical attention and special treatment needed

Inhalation of gases from a fire, thermal decomposition of the product or detonation of the prepared explosive containing nitrogen oxides and ammonia may cause irritation and corrosive effects on the respiratory system. Administer oxygen (if a competent practitioner is present), especially if the area around the mouth is bluish (methemoglobinaemia). After exposure to toxic gases, the victim should remain under medical supervision for at least 48 hours to prevent the possible occurrence of pulmonary edema.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Water

Unsuitable extinguishing media: Chemical powder or foam

5.2 Special hazards arising from the substance or mixture

When burning, it produces nitrogen dioxide (NO₂) and carbon dioxide (CO₂). Combustion/detonation under low oxygen conditions can also lead to the formation of other hazardous gases, such as nitrogen monoxide (NO) and carbon monoxide (CO).



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5.3 Advice for firefighters

Wear a self-contained breathing apparatus and a full chemical protective suit. Cool tanks and exposed structures with water spray until after the fire is extinguished.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

In the event of a spill, remove ignition sources. Keeping unauthorized personnel out of the enclosure. Avoid contact with eyes, skin and clothing. Wear equipment to protect your hands, face, eyes, feet and body. (see paragraph 8)

6.2 Environmental precautions

Prevent the product from reaching the soil or water environment.

6.3 Methods and material for containment and cleaning up

Collect the product in a clean and properly identified plastic bag, wearing gloves. Do not use electric discharge or sparking tools.

6.4 Reference to other sections

The control measures provided for in point 8 shall be taken.

Waste and materials contaminated with the product shall be treated as hazardous waste in accordance with section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Technical recommendations: Do not use electric discharge or sparking tools.

Always wear protective equipment for your hands, face, feet and body.

Before loading, vehicles and containers must be thoroughly cleaned and, in particular, cleared of all combustible debris (straw, hay, paper, etc.). It is forbidden to use highly flammable materials to pack the packages. [CV 24, item 7.5.11 of the ADR]

Avoid exposure to gases resulting from the thermal decomposition of the product, its combustion, or the detonation of the prepared explosive.

Promote adequate ventilation of the detonation sites of the explosive prepared from this product.

General hygiene recommendations in the workplace: Do not eat, drink or smoke in work areas. Avoid contact of the product with skin, eyes and clothing. Accidentally exposed hands, eyes, and skin should be washed immediately (see 4.1). Wash your hands after use. Remove contaminated clothing and protective equipment after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Technical recommendations: Store containers in a cool, dry place isolated from any organic material.

Keep containers closed. Avoid exposure to heat and direct sunlight. Do not allow the product to come into contact with oxidizable materials.

Incompatible products and materials: strong acids and bases, highly flammable or combustible materials. See section 10 for other incompatible materials.

7.3 Specific end uses

Base emulsion intended to produce a civil explosive for blasting rock, after the addition of an activating agent.

Follow the recommendations set out in subsections 7.1 and 7.2.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control parameters

Not applicable. No occupational or biological exposure limit values have been defined for any of the substances in the mixture.

Information on the control of exposure to gases resulting from the detonation of the explosive produced from the base emulsion can be found in the Class 1.5 D Emulsion Safety Data Sheet.

8.2 Exposure control

8.2.1 Appropriate roadworthiness checks

There is no additional information to that provided in section 7.



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8.2.2 Personal protective measures, including personal protective equipment

Eye/face protection:	Wear a protective visor.
Skin protection:	Hand protection: Wear PVC or PVA gloves. Other: Wear protective clothing and footwear.
Respiratory protection:	It does not require respiratory protection.
Thermal hazards:	It does not require protection.



8.2.3 Environmental exposure control

Prevent the product from reaching the water environment. Do not leave any residue of the product at the site of application.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Physical condition:	Solid (pasty)
b) Colour:	Beige
c) Odor:	Odorless
d) Melting point/freezing point:	Not determined/Not applicable
e) Boiling point:	Not determined/Not applicable
f) Flammability:	Not determined/Not applicable
g) Upper and lower explosive limit:	Not applicable to solids
h) Flash point:	Not applicable to solids
i) Auto-ignition temperature:	Not applicable to solids
j) Decomposition temperature:	Not applicable
k) pH:	± 3
l) Kinematic viscosity:	Not applicable to solids
m) Solubility:	Not soluble in water
n) n-octanol/water partition coefficient:	Not applicable to mixing
o) Vapor pressure:	Not applicable (solid mixture)
p) density and/or relative density:	Density (specific mass): 1350 – 1380 kg/m ³ (1,35 – 1,38 g/cm ³)
q) Relative vapour density:	Not applicable to solids
r) Characteristics of the particles:	Not applicable (pasty solid)

9.2 Other information

There are no other physicochemical properties to indicate for the safe use of the mixture.

10. Stability and reactivity

10.1 Reactivity

The mixture is not reactive under the recommended conditions for handling, transport and storage (see section 7).
The product reacts if it is mixed with strong acids or bases.

10.2 Chemical stability

The mixture is stable under normal ambient conditions and at the foreseeable temperature and pressure conditions during handling, transport and storage (see section 7). No change in the physical appearance of the mixture is expected within its shelf life (6 months).

10.3 Possibility of hazardous reactions

It promotes the ignition of combustible substances.
Possibility of dangerous reactions in contact with incompatible materials.
The product reacts if it is mixed with strong acids or bases, releasing excess pressure and heat.



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10.4 Conditions to avoid

Temperature: Avoid exposure to or contact with extreme temperatures (the product crystallizes).
Pressures: Avoid exposure to high pressures (the product deteriorates).
Shock: Avoid collisions.
Friction: Avoid product friction.
Ignition: Avoid sources of ignition.
Acids: Avoid contact with strong acids, as the product loses its characteristics.
Bases: Avoid contact with strong bases, as the product loses its characteristics.

10.5 Incompatible materials

Strong acids, strong bases, flammable substances, strong reducing agents, corrosive liquids, chlorates, potassium permanganate, phosphorus and explosives.

10.6 Hazardous decomposition products

The thermal decomposition and combustion of the product, as well as the detonation of the explosive prepared from it, produce hazardous gases such as nitrogen oxides (NO_x), carbon monoxide (CO) and carbon dioxide (CO₂).

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

- a) Acute toxicity: Based on the available data, the classification criteria are not met.
- b) Skin corrosion/irritation: Based on the available data, the classification criteria are not met.
- c) Serious Eye Damage/Eye Irritation: Classified Mixture - Serious Eye Damage, Category 1 (Eye Dam. 1); H318: Causes serious eye damage.
- d) Respiratory or skin sensitisation: Based on the available data, the classification criteria are not met.
- e) Germ cell mutagenicity: Based on the available data, the classification criteria are not met.
- f) Carcinogenicity: Based on the available data, the classification criteria are not met.
- g) Reproductive toxicity: Based on the available data, the classification criteria are not met.
- h) Specific Target Organ Toxicity (STOT) - single exposure: Based on the available data, the classification criteria are not met.
- i) Specific Target Organ Toxicity (STOT) - repeated exposure: Based on the available data, the classification criteria are not met.
- j) Aspiration hazard: On the basis of the available data, the classification criteria are not met.

11.2 Information on other hazards

None of the substances present in the mixture at a concentration of 0.1% or more by weight have endocrine-disrupting properties.
Other information: No information on other adverse health effects is available.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data are available on the toxicity of the mixture.

12.2 Persistence and degradability

For the constituent ammonium nitrate [according to the supplier's SDS]:

Persistence: Decomposition by hydrolysis.

Degradability: The methods for determining biological degradability are not applicable to inorganic substances.

For the constituent calcium ammonium nitrate:

High biodegradability study not required because the substance is inorganic (Annex VII of REACH).

12.3 Bioaccumulative potential

For the constituent ammonium nitrate [according to the supplier's SDS]: Bioaccumulation is unlikely.

For the constituent calcium ammonium nitrate [according to the supplier's SDS]:

Bioaccumulation is not expected. log Pow < 1.

12.4 Mobility in soil

For the constituent ammonium nitrate [according to the supplier's SDS]:

Adsorption into the soil is not expected.



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For the constituent calcium ammonium nitrate [according to the supplier's SDS]:
Mobile in the environment (very soluble in water).

12.5 Results of PBT and vPvB assessment

The PBT and vPvB evaluation of the mixture was not performed.

For the constituent ammonium nitrate [according to supplier's SDS]: The PBT or vPvB criteria of Annex III to the REACH Regulation do not apply to inorganic substances.

For the constituent calcium ammonium nitrate [according to supplier's SDS]: The PBT and vPvB assessment does not apply to inorganic substances.

12.6 Endocrine disrupting properties

None of the substances present in the mixture at a concentration of 0.1% or more by weight have endocrine-disrupting properties.

12.7 Other adverse effects

No other adverse effects are known.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste and contaminated base emulsion packaging must be managed as hazardous waste (oxidizers) in accordance with the national legislation in force (Decreto-Lei No. 102-D/2020, of 10 December, as amended). These residues have the hazardous characteristics identified in item 2.1, and the oxidizing properties condition the treatment option.

According to Decision 2014/955/EU of 18 December 2014, the RSI codes for base emulsion waste and its packaging are as follows, respectively:

16 09 04* - Oxidising substances, not otherwise specified;

15 01 10* - Packaging containing or contaminated by waste of hazardous substances.

* Waste considered hazardous under Directive 2008/98/EC

Do not leave waste or discharge it into collectors or the water environment.

Base emulsion residues mixed with the activating agent are classified as explosives and must be disposed of in accordance with the national legislation in force, under the guidance of the on-site technician (Decreto-Lei No. 139/2002 of 17 May, amended by Decreto-Lei No. 87/2005 of 23 May) [see Safety Data Sheet for Class 1.5 D Emulsions].

14. TRANSPORT INFORMATION

14.1 UN number or ID number: UN 3375

14.2 UN proper shipping name: AMMONIUM NITRATE, EMULSION

14.3 Transport hazard classes

ADR/RID/ADN (road/rail/inland waterways):	5.1
IMDG (by sea):	5.1
ICAO/IATA (by air):	5.1

Other [ADR] information:

Hazard No. 50

Tunnel Restriction Code: E



14.4 Packing group: II

14.5 Environmental hazards: The mixture is not hazardous to the environment in the light of the criteria of the UN Model Regulations (as referred to in the ADR, the RID and the DNA) and is not a marine pollutant in accordance with the IMDG code.

14.6 Special precautions for user: Not applicable.

14.7 Maritime transport in bulk according to IMO instruments: Not applicable.

15. REGULATORY INFORMATION

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

Seveso hazard category (Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012; Decreto-Laei No. 150/2015 of 5 August): P8 Oxidizing liquids and solids (Lower level requirements: 50 t; Higher level requirements: 200 t).



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Precursor of explosives subject to restrictions under Regulation (EU) 2019/1148, of 20 June 2019 (Decreto-Lei no. 62/2021, of 26 July). This mixture may not be made available to private individuals or introduced, possessed or used by them. Suspicious transactions, disappearances and significant thefts must be reported to the national competent authority (PSP, in Portugal) within 24 hours of detection.

Name of substance and CAS No.: Ammonium nitrate (CAS 6484-52-2); Nitrogen concentration in the form of ammonium nitrate: > 16% w/w); Combined Nomenclature (CN) code: 3102 30 90.

Mixture not covered by the Regulations:

- Regulation (EC) No 1005/2009 of 16 September 2009 on substances that deplete the ozone layer;
- Regulation (EC) No 850/2004 of 29 April 2004 on persistent organic pollutants;
- Regulation (EU) No. 649/2012 of 4 July 2012 on the export and import of hazardous chemicals.

15.2 Chemical safety assessment

An assessment of the chemical safety of the mixture has not been carried out.

16. OTHER INFORMATION

Safety Data Sheet review:

This revision replaces revision 1, dated 2020/05/15, effective 2022/12/06.

Changes introduced:

General: adequacy of the designation of sections and sub-sections to Regulation (EU) 2020/878 of 18 June 2020; updating of applicable legal references;

Sub-section 2.3 - Introduction of information on endocrine disrupting properties;

Section 3 - Adjustment of the concentration ranges of some components of the mixture;

Section 9 - Reorganization and updating of information on the physical and chemical properties of the mixture;

Sub-section 10.3 - Information on the promotion of ignition of combustible materials;

Section 11: Introduction of sub-section 11.2 - Information on other hazards;

Section 12: Introduction of sub-section 12.6 - Endocrine disrupting properties; updating the information on the constituents, according to the respective SDS;

Subsection 14.3: Introduction of the hazard number of the mixture;

Section 16 - Introduction of the abbreviations CLP, ECHA, FDS, IMO/IMO, ID Number, PSP, PVA, PVC, Pow, REACH, SOLAS and UNEC in the caption; updating of bibliographic references; introduction of recommendations on training.

Subtitle:

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road

CLP - Classification, Labelling and Packaging

ECHA - European Chemicals Agency

SDS - Safety Data Sheet

IMDG - International Maritime Dangerous Goods

IMO - International Maritime Organization

ELW - European List of Waste

MEMU - Mobile Explosives Manufacturing Unit

vPvB - Very Persistent and Very Bioaccumulative Substances

ID Number - Identification number of the substance, mixture or article

IMO - International Maritime Organization

UN - United Nations

PBT - Persistent, Bioaccumulative and Toxic Substances

Pow - Octanol/Water Partition Coefficient

PSP - Public Security Police

PVA - Poliacetato de vinilo

PVC - Policloreto de vinilo

REACH - Registration, Evaluation and Authorization of Chemicals

RID - International Rail Transport of Dangerous Goods

RTMP - Recommendations on the Transport of Dangerous Goods (from the UN)

SOLAS - International Convention for the Safety of Life at Sea

UNEC - United Nations Economic Commission for Europe

Bibliographic references:

Regulation (EC) No 1907/2006 of 18 December 2006 (REACH), as amended (version as of 2022/10/14)

Regulation (EC) No 1272/2008 of 16 December 2008 (CLP), as amended (version as of 2022/03/01)

Regulation (EU) 2020/878 of 18 June 2020

Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012

Regulation (EU) 2019/1148 of 20 June 2019 (explosives precursors)

Council Directive 80/181/EEC of 20 December 1979, as amended

Commission Decision 2014/955/EU of 18 December 2014

Decreto-Lei no. 62/2021, of 26 July (precursors of explosives)



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Decreto-Lei No. 139/2002, of 17 May, amended by Decreto-Lei No. 87/2005, of 23 May
Decreto-Lei no. 102-D/2020, of 10 December, as amended (version as of 2021/08/10)
Decreto-Lei No. 82/2003 of 23 April, amended by Decreto-Lei No. 63/2008 of 2 April and by Decreto-Lei No. 155/2013 of 5 November
Decreto-Lei No. 98/2010 of 11 August
Decreto-Lei No. 150/2015 of 5 August
Decreto-Lei No. 293/2009 of 13 October
Decreto-Lei no. 41-A/2010, of 29 April, as amended (version as of 2021/11/17)
Ordinance no. 309-A/2021, of 17 December (land transport of dangerous goods)
Decreto-Lei no. 24/2012 of 6 February, as amended (version as of 2021/01/06)
ADR 2021 - Agreement on the International Carriage of Dangerous Goods by Road, May 2021, Tutorial – Conteúdos e Tecnologia, Lda.
IMDG Code 2020 - International Maritime Dangerous Goods Code
Safety data sheets for the substances in the mixture (provided by the respective suppliers)
Manual of Intervention in Emergencies with Chemical, Biological and Radiological Hazardous Materials, Autoridade Nacional de Proteção Civil, June 2011, ISBN: 978-989-8343-08-6.
ECHA website: <https://echa.europa.eu/information-on-chemicals>
REACH & CLP national website: <http://www.reachhelpdesk.pt>
UNECE website: <https://www.unece.org>

Mixture classification method:

Physical hazards: Tests 8 a), b) and c) of Series 8 of the Manual of Tests and Criteria, Part I of the UN RTMP (Recommendations concerning the Transport of Dangerous Goods);
Hazards to health and the environment: Based on the classification data of the components of the mixture, applying the criteria set out in parts 3 and 4 of Annex I to CLP.

List of relevant hazard statements and precautionary statements:

H272: May aggravate fire; oxidizing.
H302: Harmful if swallowed.
H304: May be deadly by ingestion and penetration into the respiratory tract.
H318: Causes serious eye damage.
H319: Causes severe eye irritation.
P210: Keep away from heat, hot surfaces, sparks, open flames, and other sources of ignition. No smoking.
P220: Keep away from clothing and other combustible materials.
P280: Wear protective gloves (chemical resistant), protective clothing, eye protection and face shield.
P501: Dispose of the contents/container in accordance with national regulations (Decreto-Lei No. 102-D/2020, of 10 December, as amended).
P305+P351+P338: IF IN EYES: rinse thoroughly with water for several minutes. If you wear contact lenses, remove them if possible. Continue rinsing.
P370+P378: In case of fire: to extinguish use water.

Other relevant precautionary recommendations applicable to the mixture, but not included on the label by imposition of the principles of precedence (Article 28 of Regulation (EC) No 1272/2008):

P310: Contact a doctor immediately (Note: in case of contact with eyes).

Training recommendations: Regular training should be provided to workers on the basis of the information contained in this safety data sheet and the specific conditions of use of the mixture, to ensure the protection of workers' health and the environment.