1 - IDENTIFICATION

Commercial names of the products:

MINE BLACK POWDER
- MCHA
- G40 - MC 30 GR
- Export Mine Powder

Chemical designation : no purpose, **mixture**

Company: **TITANOBEL**
Rue 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 number: 33 3.80.47.23.23
Emergency call number from approved organization (INRS): 33.1.45.42.59.59 (ORFILA)
E-mail address of the person who is competent and responsible for this Data sheet: emmanuel.martin@titanobel.com

Products	CE type agreement number:	Agreement numbers:
Mine black powder MCHA	0080.EXP.97.0021	P 336 F
G40 - MC30GR	0080.EXP.97.0020	P 340 F
Export mine powder	0080.EXP.97.0050	P 339 F

Use of the product: These black powders are mainly used for shooting with ancient guns. **(SU2a) n°**
VI index n°: without purpose
CAS n°: without purpose
REACH record n°: without purpose (mixture)

2 – HAZARD IDENTIFICATION

Danger of mass explosion, i.e. affecting almost the entire loading in practice instantaneously. If a fire occurs, you'll have a risk of violent reaction with possible harmful gas emission (azoth oxides NOx and carbon monoxide).
Contact with eyes: irritation.

Stocking classification of the powder in its carriage package

Classification in risks' division 1.1 - compatibility group D according to decree dated April 20th, 2007, modified.

Symbol of danger

E : Explosive

Risk phrases

R2: explosion risk due to shock, friction, fire or other ignition sources
R11: highly flammable

3 - COMPOSITION/INFORMATION ON THE COMPONENTS

Hazardous substances contained in the **mixture**	Rate	Symbol of danger	N° CAS	N° EINECS	Risk sentence
- Potassium nitrate	> 70 %	O	7757-79-1	231-818-8	R 8
- Sulphur		**Xi**	7704-34-9	231-722-6	**R 38**
- Charcoal			**7440-40-0**		

- Meaning of the danger symbol: O: Oxidizing; **Xi: irritating**
- Meaning of the risk sentences: R8: Contact with combustible material may cause fire; **R38: irritating to skin**

4 - FIRST AID MEASURES

4.1 - Overall indications

In any cases, consult immediately a doctor.
In case of fire, symptoms **may appear** obviously caused by inhalation of combustion gas.
First of all, move the injured far away from the hazardous zone
If possible, give a dexamethasone aerosol for inhalation
If necessary, give some oxygen
In case of blackout, lay down and carry the person in a lateral stable position
In case of respiratory stopping, practice artificial respiration
After suction of dust, bring the injured outside so he can breathe in open air without pollution
If the symptom persist, for example caught, consult a doctor
Persons who inhale combustion gases don't show immediately intoxication symptoms. Patients must remain at least 48 hours under overseeing.

4.2 - After contact with skin Rinse with water and, if necessary, consult a doctor.

4.3 - Particular indications: Nothingness

In case of contact with eyes, rinse immediately and abounding with water at least 15 minutes keeping eyelids open. Consult and ophthalmologist.
In case of ingestion, don't give something to drink
Protection of rescuers: avoid any extending contact with skin and inhalation of dusts.

5 - FIRE FIGHTING MEASURES

5.1 - Overall Indications

Keep away anyone who isn't authorized. Inform neighbors about the danger of explosion

5.2 - Closeness fire fighting measures (the product isn't touched yet)

Fight the fire with all means available (water, extinguisher with dry powder, etc…) Avoid the contact of fire with product/material
If necessary, move away all vehicles from the seat of the fire

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

Don't try to extinguish the fire, risk of explosion
Evacuate immediately the hazardous zone and look for a shelter
Inform neighbors about the danger of explosion

5.3.1 - Appropriate extinguish means

Don't try to extinguish the fire. Risk of explosion

5.3.2 - Means to extinguish you must not use because of safety reasons: not applicable

*5.4 - Special danger bound to **mixture**, combustion of products or gave off gas*

In addition to the risk of explosion, in case of fire or heat, you have to reckon with smell of toxic/dangerous gas, vapors as well as forming of pyrolysis products for example carbon monoxide, azoth oxides (nitrous gas), ammoniac.
Don't breathe the gas / vapors / smokes from the explosion or/and from the fire
Risk of a toxically oedema on lungs.

Extinguishing method:

Submerge with large quantities of water at the beginning of the fire
In case of fire of the product in the depot or during carriage: don't intervene but move quickly away till you reach the necessary safety distance and block accesses.
Note: protection for the interveners: isolating breathing apparatus because of harmful gas emission (azotes oxides NOx and carbon monoxide)

6 - MEASURES TO TAKE IN CASE OF ACCIDENTAL DISPERSION

6.1 - Avoid contact of nude product, with skin and eyes. Don't breathe the product's dusts.

6.2 - Individual precautions

Collect carefully and with the adapted individual protection (see section 8), previously don't forget to dampen the product. Avoid especially any dirt with foreign bodies (like gravel, iron filings, metal bodies,…) because of the sensitivity of these products to mechanical appeals.

6.3 - Environmental precautions

Should the package have been opened accidentally, don't leave the spread product. Don't evacuate to a garbage depot or to the sewers, then check the product is identified on the container.

6.4 - Methods for cleaning up

Previously dampen the product in order to reduce the risk of ignition.
Collect in a packaging recommend by Titanobel (see section 14) according to the safety measures bound to handling and transfer the identification of the product on the new packaging. Then, carefully wash the ground with large quantities of water.
Contact Titanobel if specific problems are encountered.

7 - HANDLING AND STORAGE

7.1 - Handling

Technical measures and precautions: during all handling operations, keep the product away from sources of heat, flames and sparks, avoid all shocks, friction and any risk of electrostatic discharge.
Install a screen between the worker and the product in order to reduce thermal flows to the work station in the event of ignition.
Caution: avoid dust development
Using advise: avoid any contact with chemically incompatible matters (see § 10)

7.2 - Storage

Technical measures: eliminate defect packaging
Storage: packaging must be piled in a stable way shielded from bad weather. When the handling is made by hand, the bottom of the packaging must not be at more than 1.60m above the floor. When handling is made mechanically, piles must not be higher than 3m.
Preservation delay: better use before

- Within 3 years up from the date of manufacturing for products stored in plastic bags inside cardboard boxes.
- Within 5 years up from the date of manufacturing for products stored in plastic cans

Incompatible matters: do not store with products out of class 1 and with products from class 1 but which compatibility group will be different from D or S
Packaging material: store in Titanobel approved containers, with maximum net weight clearly indicated (see section 14).

7.3 - Particular use

Comply with instruction loading manual of used guns, technical data sheet and the regulation in force 3 (see section 15).

8 - EXPOSURE CONTROL / INDIVIDUAL PROTECTION

8.1 - Individual Value Limit. No purpose

8.2 - Personal Exposition Value Limit

Nothing to point out in standard conditions of use. Nowadays, there's no exposition value limit for the potassium nitrate, the sulphur and the charcoal.

8.3 - Approved individual protection equipment

- Eyes protection: it is recommended to wear glasses
- Body protection: all handlings must be realized with leather gloves and suitable working clothes (it's recommend to use fireproof material). In any case, never wear clothes easily flammable and/or capable to melt under influence of incandescent particles projection.

9 - PHYSICAL AND CHEMICAL PROPRERTIES

9.1 - physical state /form

These powders are presented in a form of very thin grains

Color of **the mixture**: black or grey

Odor: odorless

Particular temperatures in case of change of physical state: no purpose (there will be inflammation before)

Flash point: no purpose

9.2 - Important safety indications and sanitary and environment protection

Real acidity value (pH)	not applicable
Boiling point /boiling domain	not applicable
Inflammability	not applicable
Risk of explosion	can explode, especially with impurities, firing inclusions or strong heating
Burning characteristics	not applicable
Vapor pressure	not applicable
Division rate (n, -Octanol / water)	not applicable
Viscosity	not applicable
Vapor density	not applicable
Vaporization speed	not applicable

9.3 - Pyrotechnical safety characteristics

- Auto-inflammation temperature by sudden heating : Test SNPE 43 (FE/ 43/ 14/ 80/ 009) (GEMO FMD - 452 - A - 2)	426° C *
- Auto-inflammation temperature by progressive heating: Test SNPE 47 (FE/47/14/81/005) (GEMO FMD – 051 – A – et CSE 3.02 / F2)	351° C *
- Sensitivity to electrical spark Test SNPE 37 B (FE/37B/03/84/015) (FE/37B/03/84/014	≥726 J **
- Sensitivity to friction Test SNPE 16 (NT VG/1/7/75 et FE/16/14/88/005) Test d'agrément: CSE 3.51 / J1 (GEMO FMD – 040 – A - 1	No reaction at 353 N ***
- Sensitivity to shock - Test to shock drop weight of 30 kg Test SNPE 17 (FE 17/14/80/008) (GEMO FMD – 010 – E – 2 et CSE 3.44/ I4) height of no propagation height of no reaction - Deflagration in open air gutter Test SNPE 20 (FE 20/003/80) (GEMO FMD – 061 – A – 1 et CSE 3.21 / L1)	 ≥ 4 m **** 3,0 m**** 2000 mm/s *
- Priming of the detonation through a fence Test SNPE 27 (FE/27H/14/79/001) (GEMO FMD – 031 – A – 1 et CSE 3.75/P5) Force Apparent volumic Mass of the granulated powders Solubility:	 ≤ 1 card * 276 cal/g about 1000 kg/m^3 soluble in water

** Values obtained on a thin powder (HE 003 A Index 7 - SNPE)*

*** Values obtained on Pulvérin*

**** Values obtained on MC 30*

***** Values obtained on hunt black powder*

10 - STABILITY REACTIVITY

Conditions to avoid

Mechanical influences (for example shock, crushing, friction, collision)	Temperatures over 50° C
Fire, sparks or any other ignition sources	Contact with substances described in section 10.4

10.2 - Stability

In normal storage conditions, the product is stable chemically. Nevertheless, in case of abnormality the product must be placed in confinement and the anomaly must be immediately communicated to the technical department of Titanobel.

10.3 - Dangerous decomposition products: nothing to point out (See sections 3 et 5)

10.4 - Material to avoid :

Avoid contact with alkalis, amines and strong acids or oxidizing agent, detergents. Do not store with products apart from class 1 as well as products class 1 whose compatibility group is different from D or S.

11 - TOXICOLOGICAL INFORMATION

11.1 - Intense Toxicity Nowadays, no evaluation has been done on the **mixture**.

11.2 - Exposition way Ingestion, inhalation, eyes and skin.

11.3 - Intense effects / symptoms

- Weakly irritating to skin
- Weakly irritating to breathing ways (cough / asthma)
- Weakly irritating to eyes /redness of ocular tissue

Following symptoms have been pointed out:

For potassium nitrate:

- cephalous/ breathing difficulties
- vomiting/nausea
- stomach pains
- irritation of mucous membrane
- abdominal aches

11.4 -Chronic effects After exposure /extended or recur contact: eruption / dermatitis

11.5 - Substances / Individual components

Intense toxicity: (sulphur)

Oral way, LD_{50}, rat > 2000 mg/kg

Inhalation, LC_{50}, 4h, rat > 9,23 mg/

Dermic way, LD_{50}, rabbit > 2000 mg/kg

12 - ECOLOGICAL INFORMATIONS

Nowadays, no evaluation has been done on the **mixture**. Do not through in the sewers, neither in natural environment.

12.1 - Ecotoxicity

Potassium nitrate

CL_{50} (72h) = 200 mg/l (Poecilia Reticulata)

Toxicity in respect of water fleas

CL_{50} (48h) = 490 mg/l (Daphnia magna)

LE_{50} = 200/1000 mg/l (plankton)

12.2 - Persistence and degradability

Potassium nitrate is a substance in the form of ionogene and also of life cycles of natural materials like those of the azoth et can easily be transformed in other elements of this life cycle. See, nevertheless section 12.5.

12.3 - Bioaccumulation potential

Potential bioaccumulation of this **mixture** is very low because those of the raw material are very low.

12.4 - Results of the evaluation of PBT properties (persistent, bio-accumulable et toxic)

Nowadays, no evaluation has been done on the mixture.

12.5 - Other harmful effect

Too much potassium nitrate can involve eutrophication of water and over fertilisation of the grounds. The careful manipulation of this substance is thus imperative. With careful manipulation of this product and use in compliance with the prescriptions, the harmful effects are impossible.

13 - DISPOSAL CONSIDERATION

Waste and residues

The product should not be abandoned, it must be collected to be evacuated according to the recommendations prescribed in section 6, then, stored with monitoring according to recommendation prescribed in section 7, or destroyed with heavy quantities of water in an area affected to destruction. Never try to destroy black powder by ignition. Do not mix with other incompatible residues (§ 10).
In any case, comply with the rules in force. In the event of complications, it is advised to take contact with Titanobel.

Soiled packaging

Depending on its state, it can be used again for the same product or for a different product after an appropriate cleaning, or, destroyed according to following conditions: the soiled packaging is carefully examined to verify that it is empty then, either it will be burned, **nowadays' best technique (see BREF-OFC)**, on an area planned for that purpose within respecting the safety instructions of the establishment, or it can be returned to Titanobel according to conditions defined between both parties to be treated inside the destruction's channels.

14 - INFORMATION RELATIVE TO TRANSPORT

Transport classification for transport in agreed packaging

Official designation for transport :

BLACK POWDER IN GRAIN OR IN FLOUR FORM

Road way:	Maritime way:	Aerial way:
- ADR-RID: ONU N° 0027 1.1 D 4°	- IMDG :ONU N°0027 1.1 D	- OACI: forbidden
Packaging method: **P113**	Packaging method: **P113**	

Recognized packaging: First method:	Recognized packaging: Second method
- Internal packaging: polyethylene bag 5 H 4 - External packaging: cardboard box 4 G - Maxi net mass: 25 kg - packaging instruction: P 113 - Particular layout: PP 50	- Unitary internal packaging: small plastic can, capacity: 500 g maxi - External packaging gathering: cardboard crate 4 G - Maxi net mass : 50 small cans 25 kg - in packaging instruction: P 113 - Special arrangement: PP 50

15 - LEGISLATION INFORMATION

Symbol	E	Explosive
Risk sentences	R 2	Risk of explosion by shock, friction, fire or other ignition sources
	R11	Highly flammable
Caution advices	S 33 S 35 S 36 / 37 S 41	Take precautionary measures against static discharges This material and its container must be disposed of in a safe way Wear suitable protection clothes and gloves In case or fire and/ or explosion, do not breathe fumes

Principal French laws and regulation in force nowadays:

- Defence code modified and application's decision
- Environmental Code
- Decree 79-846 du 28.09.79 and it application's decision
- Decree n° 92-1164 modified on 22.10.1992 and it application's decision
- Decree n° 87-231 and it application's decision
- **TMD decree in force**
- General rules of the Extractive Industry (RGIE) - Title Explosives
- **The product is the concern of the European Directive 93/15**

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.

Note: modifications facing the previous version **appear bold**