

1- IDENTIFICATION

Commercial identification:

FLEXIBLE DETONATING CORDS

Chemical identification: no purpose, mixture

Supplier: TITANOBEL

Rue de l'industrie 21270 PONTAILLER SUR SAÛNE

Phone: 33.3.80.47.67.10 – Fax : 33.3.80.47.67.11

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Emergency call from approved organisation (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's number:	Agreement identification N°
Titacord 12 g/m de PETN	0080.EXP.00.0041	
Titacord 15 g/m de PETN	0080.EXP.00.0042	
Titacord 20 g/m de PETN	0080.EXP.00.0043	
Titacord 40 g/m de PETN	0080.EXP.00.0044	
Titacord 70 g/m de PETN	0080.EXP.00.0045	
Eclair Plastex H 3 g/m de PETN	080.EXP.97.0092	AT 151 F
Eclair Plastex H 5 g/m de PETN	080.EXP.97.0093	AT 152 F
Eclair Plastex H 10 g/m de PETN	080.EXP.97.0094	AT 153 F
Eclair Plastex H 12 g/m de PETN	080.EXP.97.0095	AT 154 F
Eclair Plastex H 15 g/m de PETN	080.EXP.97.0096	AT 155 F
Eclair Plastex H 20 g/m de PETN	080.EXP.97.0097	AT 156 F
Eclair Plastex H 40 g/m de PETN	080.EXP.97.0098	AT 157 F
Eclair Plastex H 70 g/m de PETN	080.EXP.97.0099	AT 158 F
NP12		AT 107 F
NP20		AT 140 F
Nitrocord 12	0589.EXP.3585/99	
Nitrocord 20	0589.EXP.3584/99	
Nitrocord 40	0589.EXP.3560/99	
Nitrocord 80	0589.EXP.0599/99	
Nitrocord 100	0589.EXP.0600/99	

Use of the product: explosive objects used in priming of explosives during rocs extraction .(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 instantaneous

- In case of fire, risk of explosion. Danger by inhalation of decomposition of products.

Avoid to subject these products to an intense heat or any sources of sparks

Classification transport in its transport packaging

Classification in risk's division 1.1 compatibility group D according to decree dated 20th April 2007 modified**- Hazard pictograms**

E : Explosive - risk of explosion by shock, friction, fire or other sources of ignition



Risk phrases:

R3: extreme risk of explosion by shock, friction, fire or other sources of ignition

3 - COMPOSITION/INFORMATION ON THE INGREDIENTS

Secondary explosive (made with PETN) of lineic load lower than 80 g/ m, in a plastic tube wrapped in plaited textile layers coated with a thermoplastic. PETN CAS number: 7811-5 and EINECS number: 212/413-5

4 - FIRST AID MEASURES**4.1 - General advice**

In any case, see immediately a doctor

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

Bring the person outside the contaminated area

If possible, give a dexaméthasone 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

Wash immediately and rinse abundantly with water within 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 extended dust inhalation

5 - FIRE FIGHTING MEASURES

5.1 - General indications

**This product is an explosive, keep unauthorized persons away
Warn neighbourhood 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 neighbours about the explosion's danger

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 substance, its combustion products or gases

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

Don't breathe the gases / vapour / 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 precautions

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** respecting all safety measures bound to manipulation and write on the new packaging the identification of the product. Then, clean 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 formally 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

Storage conditions: keep the product in its original packaging in a warehouse at ambient temperature

Conservation period: the product must be used within 5 years after 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 with the maximum net weight specified (see § 14)

7.3 - Specific end use(s)

Comply with **the 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

8.3 - Individual protection equipment

- Protection of the ears if necessary

- Protection of the body: all the handling must be realised with leather gloves and suitable working clothes and

- Specific hygiene measures: do not eat, drink with contaminated hands.

9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 - Appearance of flexible detonating cords:

It is a spool of plastic tube containing a core of PETN.

Specific temperatures for change of physical state :

Softening of the tube at 80° C

These cords can resist to a 50 daN traction during 30 minutes (Test CSE 2.27 / J4)

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
Relative density	1.77
Density in bulk	≈ 1
Solubility	Pretty insoluble in water / soluble in some organic solvents like acetone, ethyl acetate

9.3 - Pyrotechnical Safety Properties

- They are sensitive to heat and shock: Risk of mass explosion (detonation)

- Sensitivity to shock drop weight 30 kg:

Test CSE3.49- I9: possible partial reaction (without explosion) drop height 0,5m.

- They are sensitive to usual detonator loaded at 0,6g PETN

Pyrotechnical safety properties of the active component of the flexible detonator cords:

Here after, the characteristics of the most penalizing active component, i.e. PETN :

- Temperature of the beginning of decomposition: from 140° C

Behaviour of explosive in bulk:

Auto-inflammation temperature by progressive heating:

Test SNPE 47 (FE-47/14/94/007) (GEMO FMD - 051 - A - 1) (CSE 3.02/F2)	(PETN 100-200µ) 189° C
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- Sensitivity to friction

Test SNPE n°16 PV16/14/84/009(GEMO FMD - 040 - A - 1) (CSE 3.51/J1)	(PETN 100-200µ) 50 N
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- Sensitivity to shock drop weight 30 kg

Test SNPE 17 PV 17/14/91/009

(PETN N) HLNR 0,75m HLNP 0,75m

- Outdoors explosion in gutter

Test SNPE 20 (PV 20/14/82/001) (GEMO FMD - 061 - A - 1) (CSE 3.21/L1)	(PETN F) no propagation
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- Priming of the detonation through a gate

Test SNPE n° 27 - PV/14/82/034 - PV 27/14/82/001	(PETN A) > 400 cards
(GEMO FMD - 031 - A - 1) (CSE 3.75/P5)	(PETN F) 330 cards

10 - STABILITY AND REACTIVITY10.1 - Conditions to avoid

Mechanical influences (for ex. shock, crushing, friction, collision) Fire, sparks or any other ignition sources

Temperatures over than 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 behaviour of the explosive (gazing freeing, strong odour, significant segregation, warming), the product must be isolated and the anomaly must be immediately pointed out to the technical department of Nobel

10.3 - Dangerous 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 and zinc their alloys and washing powder. Do not storage with products of the Class 1 which group of compatibility would be different from D or S

11 - TOXICOLOGICAL INFORMATIONS

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:

For PETN :

Active hypotensor and a vasodilator. Risk of red patches and headaches in case of ingestion.

11.4 - Chronicle effects

Possible light irritation. In case of accidental degradation of the tube of the supple detonator discovering the active substance, avoid direct contact with skin. Do not ingest. Toxicological properties of the PETN, no toxicology. It's however useful to notice that it's an active hypotensor, susceptible to provoke a vasodilatation with red patches and headaches.

11.5 - Substances/ individual components

PETN

Oral acute toxicity (LD₅₀ oral, rat (mg/kg)) = 19500 mg/kg

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

Lethal dose for a man = 1169 mg/kg

PETN is a active hypotensor and a vasodilator. Risk of red patches and headaches in case of ingestion

12 - ECOLOGICAL INFORMATION

Do not discharge the explosives' soil and the waste of the tubes into drains or in natural environment

Mobility: the explosives contained in the tubes are almost insoluble in water

13 - CONSIDERATION RELATIVE TO DISPOSAL

Waste and residues

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.

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), **respecting** the safety instructions of the establishment, or sent back to Titanobel according to the conditions defined between the two parties to be treated inside the destructions' channels.

14 - INFORMATION RELATIVE TO TRANSPORT

Classification for transport in recognized packaging:

Official description for transport:

CORDEAU DETONNANT SOUPLE/FLEXIBLE DETONATING CORD

- road ways: RID et ADR	Number 5°, 1.1 D, N° ONU 0065
- maritime ways: code IMDG	N° 0065 – division 1.1D
- aerial ways: classification OACI	Forbidden to transport

Recognized packaging:

- External packaging in cardboard box 4 G
- Packaging method : P139
- Particular layout: PP 71
PP 72

15 - REGULATORY INFORMATION

Symbol	E	Explosive
Codes for the hazard statement	H201	Explosive, risk of mass explosion
Precautionary statements	P210	Keep away from heat, hot surfaces /sparks/open flames/ other sources of ignition - No smoking
	P250	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

Precautionary statements	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
	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**