# PRODUCT CATALOGUE

EURENCO

YOUR PARTNER FOR ENERGETIC MATERIAL

FUEL ADDITIVES

DEFENSE, SPACE AND SECURITY

OIL & GAS INDUSTRY

# Introduction

## Your Partner for Energetic Materials.
## Unmatched Expertise. Proven Solution.

Widely acknowledged for its high level of expertise and know-how in chemical synthesis and transformation of energetic molecules, EURENCO develops, manufactures and provides a largely diversified range of cutting-edge energetic materials for both the defense and the commercial markets.

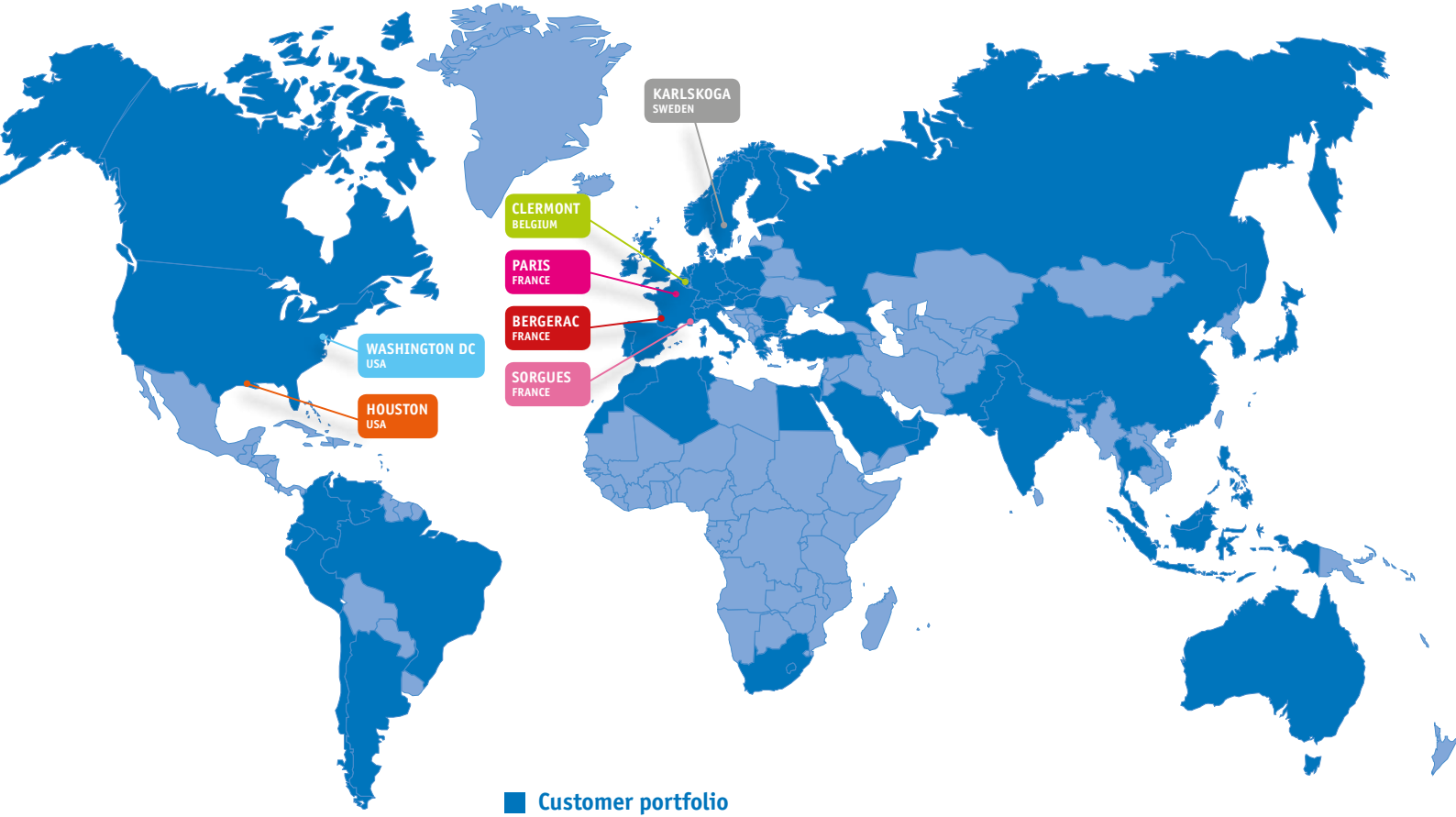
Increasingly involved in new international programs, EURENCO has reinforced its production capabilities in Europe and restructured its activities, to best meet the needs of its partners in the following sectors:

- **FUEL ADDITIVES**
- **DEFENSE, SPACE & SECURITY**
- **OIL & GAS AND MINING INDUSTRY**

A leading European company for military explosives, propellants and combustible items, EURENCO also provides explosives for the civil sector (oil & gas perforation, mining), and additives for diesel fuel, 2-EHN in particular, a chemical that improves diesel fuel quality.

Laboratories, pilot workshops, multi-purpose units and large scale facilities, all contribute to strengthening EURENCO's R&D and manufacturing capabilities, allowing small scale to mass production.

A favored partner of major companies worldwide, EURENCO aims to constantly enhance its flexibility and reactivity to provide a tailor-made service for common success.


KARLSKOGA
SWEDEN
CLERMONT
BELGIUM
PARIS
FRANCE
BERGERAC
FRANCE
SORGUES
FRANCE
WASHINGTON DC
USA
HOUSTON
USA
Customer portfolio

eurenco.com

# Your Partner for Energetic Materials.
# Unmatched Expertise. Proven Solution.

Created in January 2004 to bring together the French, Belgian and Swedish Explosives & Propellants activities, EURENCO inherited its prestigious predecessors' (SNPE and Bofors) centuries of in-depth knowledge of energetic materials.

In December 2013, Groupe SNPE (owner of EURENCO) was acquired by GIAT Industries (parent company of the NEXTER Group).

Ranges of EURENCO products are marketed through specific brands:

- **Bofors Powders:** propellants for hunting, sporting and law enforcement
- **MANUCO:** energetic nitrocellulose for propellants and propelling charges
- **PB Clermont:** spherical powders for small and medium caliber ammunition
- **VeryOne:** 2-EHN cetane improver for diesel fuels

From its headquarters based South of Paris (Massy •), EURENCO operates 4 modern production plants in France (Bergerac •, Sorgues •), Belgium (Clermont •) and Sweden (Karlskoga •).

EURENCO is also present in the United States, through a commercial office in Washington DC • (for explosives, propellants and combustible items) and a distribution company in Houston • (for fuel additives).

In order to meet the strong market demand, EURENCO also runs a number of storage facilities worldwide, among which one of the largest storage parks for pyrotechnics in continental Europe.

EURENCO
BOFORS POWDERS

Bofors has developed world class powders for more than 100 years, pioneering the development and manufacture of new and customized propellants for ammunition in hunting, sporting and law enforcement.

Bofors Powders is Alfred Nobel's legacy. Relying on the same spirit of innovation, Bofors Powders continues to develop and manufacture the highest quality of propellant in the very same location where Nobel once built its laboratory. Like him, Bofors Powders strives to look ahead, to be the best and the one leading the way. This is Bofors' driving force, and has been since 1898.

EURENCO Bofors offers an extensive range of high quality extruded propellants, as well as customized propellants specially designed to maximize performance. Grain geometry and composition for each propellant type is designed to meet the required characteristics for the chosen application.

Bofors Powders supplies the world's leading brands of premium and accurate long-range ammunition.

For more information:
www.eurenco.com

Located in Bergerac (France), MANUCO is a joint venture between EURENCO and MAXAM Chem. Using either cotton linters or wood pulp as raw materials, MANUCO manufactures different grades of energetic nitrocellulose for the production of propellants (for all caliber ammunition), propelling charges and dynamite.

MANUCO provides 3 kinds of energetic nitrocellulose:

- With high nitrogen content (gun cotton);
- With low nitrogen content (pyrocellulose);
- A blend of both high and low nitrogen content.

Custom-made nitrocellulose can also be manufactured to meet any military standard.

Inheriting Bergerac NC's extensive know-how and understanding of quality, safety and environmental stakes related to this product, MANUCO is able to offer technical assistance as well as R&D capacities.

For more information:
www.manuco-nc.com

PB Clermont, standing for “Poudrerie Belge de Clermont”, was founded in 1850 and is one of the world’s most experienced propellant manufacturers.

PB Clermont produces exclusively spherical propellants, a nitrocellulose smokeless powder suitable for:

- small and medium caliber (up to 25 mm) ammunition
- civil applications (power tools)
- mortar rounds secondary charges

Spherical powders provide an improved loading of cartridges due to an excellent flowability, excellent physical and chemical stability, as well as lower barrel erosion.

Faced with an extensive and highly diversified world-wide market, PB Clermont has made a point of listening carefully to customer requirement and trends, in order to constantly enhance, optimize or innovate.

For more information:
www.pbclermont.be

Capitalizing on its extensive experience in alcohol nitration, coupled with vast expertise in the manufacturing of explosives, EURENCO developed its own specific production process to safely produce Cetane Improver, also known as 2-Ethylhexyl Nitrate (2-EHN).

Over 30 years after it first started, the production of Cetane Improver has become a fully integrated and vital part of the Sorgues manufacturing complex (France).

Anticipating the growing need for fuel additives offering both technical and economical advantages, EURENCO launched a new brand to promote its 2-EHN solution and meet the strong market demands worldwide: VeryOne Cetane Improver.

Relying on more than 7,800 metric tons of North American product storage, as well as an annual capacity of 75,000 metric tons of Cetane Improver, VeryOne is the world leading 2-EHN manufacturer.

EURENCO VeryOne offers the greatest capacity, reliability and expertise.

For more information:
www.veryone.com

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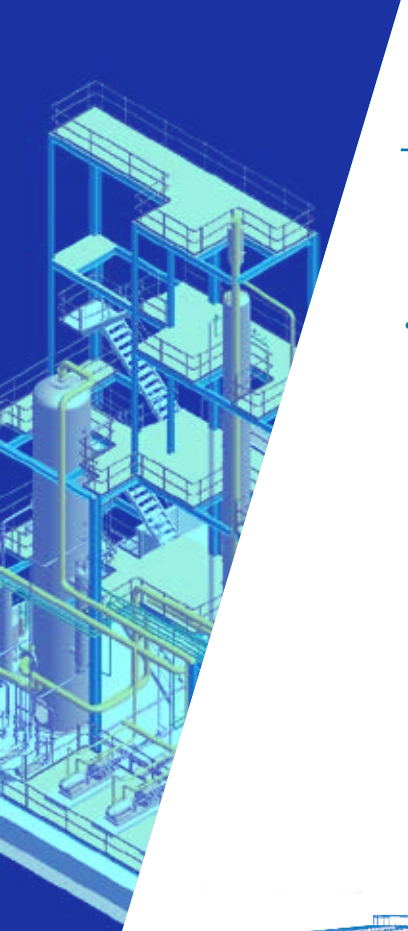
## PROPELLANTS



## COMBUSTIBLE ITEMS



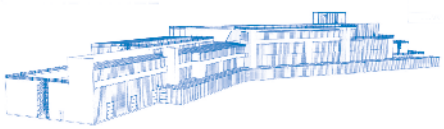
# Transfer of Technology

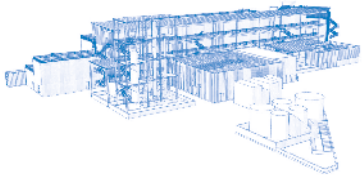
- EURENCO has **proven experience** in the management of Transfer of Technology projects, through the SNPE Group during the 1970s-1980s:
  - > Technologies: production units for high explosive filling, nitrocellulose, spherical powders and single base propellants
  - > Countries involved: USA, Brazil, Canada, India, South Korea

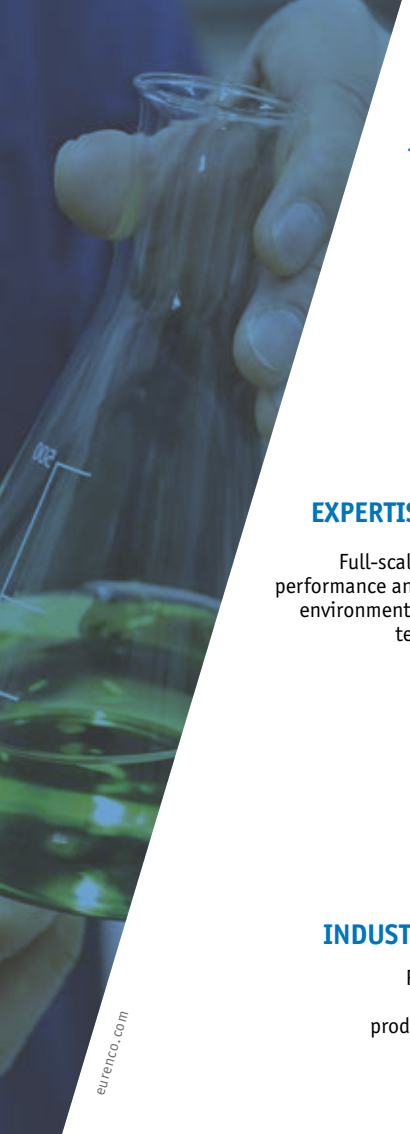
- Today, with regards to explosives and propellants, **technologies considered for transfer** include:
  - > New construction or upgrade of complete production units
  - > Quality control laboratories for physicochemical tests and ballistic tests
  - > Rehabilitation of pyrotechnic industrial sites

- **2 options** for EURENCO:
  - > Technology licensor on outright ToT projects
  - > Technology licensor and subcontractor for a qualified and competitive engineering company on turnkey projects

TOT PROJECTS ARE SUBJECT TO THE FRENCH GOVERNMENT'S EXPORT CONTROL REGULATIONS



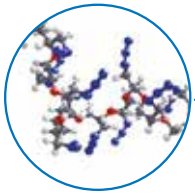




# Research & Development

## DESIGN

Engineering of new energetic materials



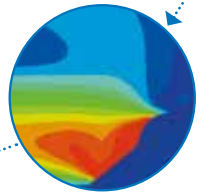
STRONG PARTNERSHIPS WITH OUR CUSTOMERS

## FEASIBILITY ON LAB SCALE

Nitration, crystallization, characterization and small-scale formulation

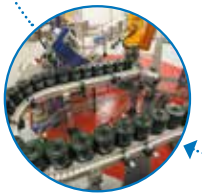
## DEVELOPMENT

Assessment of mechanical, ballistic and detonic properties



## INDUSTRIALIZATION

Pilot workshops, multi-purpose production units and loading facilities



## EXPERTISE

Full-scale performance and environmental tests

## 4 ACTIVITY SEGMENTS:

> Explosives

> Small, medium and large caliber propellants

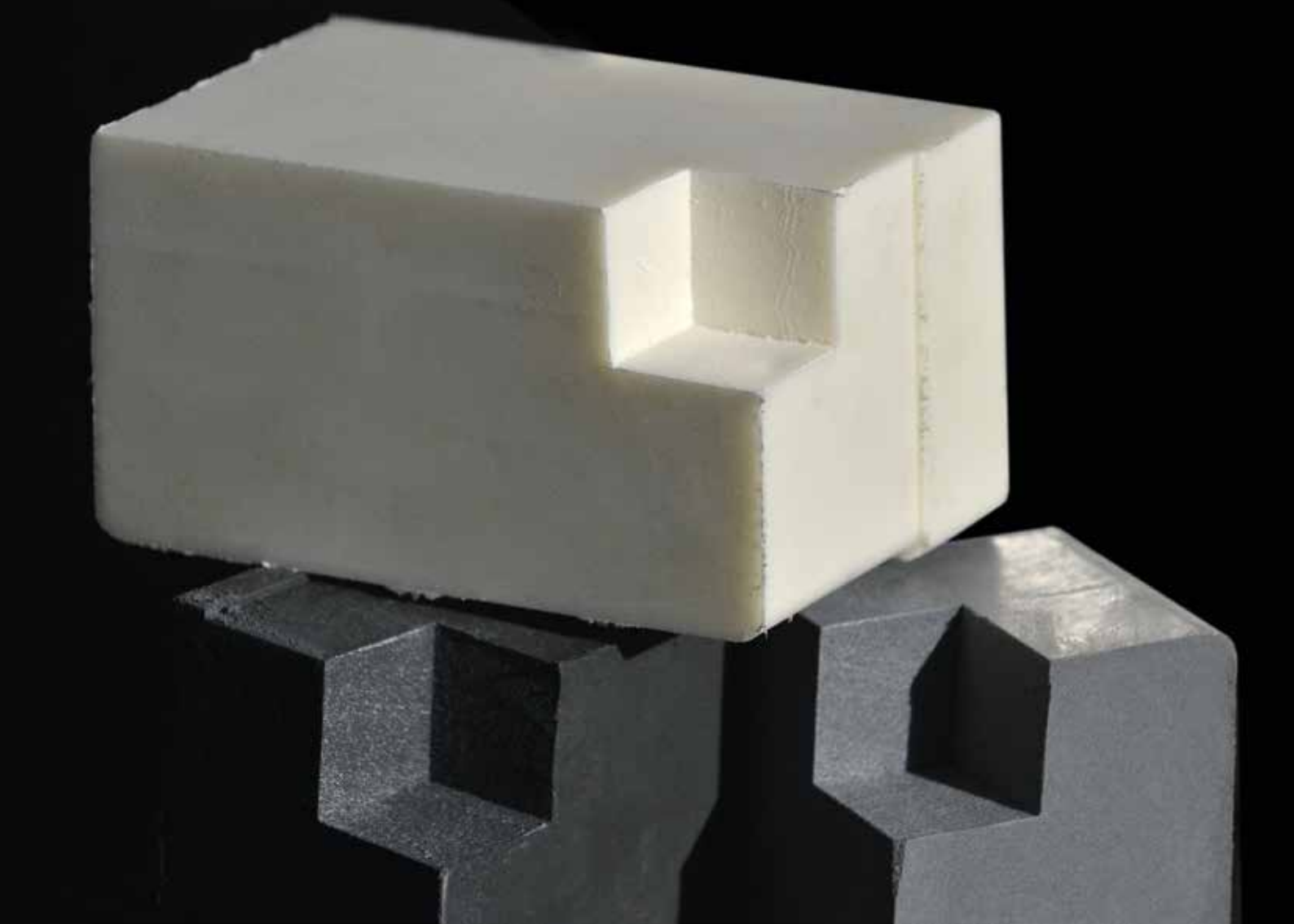
> Modular charges and combustible items

> Fuel additives

## EUROPEAN-WIDE R&D NETWORK

## MEMBER OF IMEMG, GTPS

## ONE HUNDRED OR SO ACTIVE PATENT FAMILIES




EXPLOSIVES

# EXPLOSIVES

EURENCO develops, manufactures and provides a unique range of products for the military and civil markets:

- **High explosives (Conventional & Insensitive)** for melt-cast, pressed and cast PBX explosive charges, fuse boosters, pyrotechnics, mining and oil & gas applications;
- **Cast PBX charges for Insensitive Munitions:** missile warheads, bombs and penetrators, torpedoes, underwater mines and shell ammunition;
- **Plastic explosives** for demolition, breaching and cutting operations.

To ensure both flexibility and large-scale capabilities, EURENCO is equipped with modern and innovative facilities, such as multipurpose synthesis units and automated filling workshops for Insensitive Munitions.

**PRODUCTION PLANTS**

Karlskoga (Sweden)
Sorgues (France)

**COMMERCIAL OFFICE**

Paris (France)
Washington DC (USA)

# EXPLOSIVES
# SINGLE MOLECULES

EXPLOSIVES

# SINGLE MOLECULES

EURENCO provides a complete range of high explosives, including primers, oxidizers, energetic polymers, as well as insensitive and thermostable molecules.

Laboratories and multi-purpose units also contribute to the development and scale-up of new energetic molecules.

# RDX

Best solution for both performance and cost

## SPECIFICATIONS

MIL-DTL-398 C

STANAG 4170

## APPLICATION

Main charges for warheads, ammunition and boosters

Pyrotechnical devices (cap-relay, detonators, cutting cords)

Oil well perforating charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8 750 m/s |
| RDX type 1 and type 2 available in all standard particles sizes (Class 1 to Class 5)<br>Specific grades available on request | |
| I-RDX (“insensitive grade”)<br>Threshold for detonation | Increased from 25 to 55 Kbar when used with PBXN109 |

# HMX

Best solution for high performance,
high thermal stability and low shock sensitivity

## SPECIFICATIONS

MIL-DTL-45444 C

STANAG 4284

## APPLICATION

Main charges for warheads, ammunition and boosters

Oil well perforating charges, shock tubes and detonating cords

Formulations more insensitive to shocks

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,91 |
| Detonation velocity | 9 100 m/s |
| Deflagration point | 287 °C |
| Threshold for detonation | increased from 28 to 40 Kbar when used in PBX with 85% HMX |
| Standard particle sizes | class 1 to class 5 |
| Specific grades available on request | |

# CL-20

Higher performance than standard explosives

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

High impulse energetic material for rocket motor applications

High explosive and high energetic aluminized and minimum smoke propellant

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 2,02 - 2,04 |
| Detonation velocity | 10 000 m/s |
| Particle sizes | coarse (100/150 µm) and medium (20/50 µm) |

# HNS

High thermal stability and good initiation reliability

## SPECIFICATIONS

MIL-WS-5003

## APPLICATION

Booster charges
Space and military pyrotechnics
Perforating and cutting charges for oil & gas industry
Initiation explosive in slapper detonators

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,74 |
| Detonation velocity | 7 000 to 7 100 m/s |
| Deflagration point | 316 – 318 °C |
| HNS type 1 to type 4 | |

# TATB

Low sensitivity and high thermal stability

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Insensitive compositions for main charges and boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,94 |
| Detonation velocity | 7970 m/s |
| Self ignition temperature | 320 °C |

# FOX-7

Greater resistance to impact and friction than standard explosives

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Insensitive compositions for main charges and boosters

High performance propellants for tank ammunition

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,885 |
| Detonation velocity | 8 800 m/s (RDX: 8 930 m/s) |
| Heat of formation | -8 kJ/mole |
| Particle sizes | class 1 to class 4 |

# GUDN (FOX-12)

Low sensitivity, excellent thermal stability, high gas yield

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

LOVA propellants and insensitive fillings for ammunition

Automotive safety

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,75 |
| Detonation velocity | 8 210 m/s |
| Heat of formation | -355 kJ/mole |

# NTO

High performance, low sensitivity and enhanced thermal stability

## SPECIFICATIONS

STANAG 4170

## APPLICATION

Insensitive compositions for main charges and boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,91 |
| Detonation velocity | 8 430 m/s |
| Friction sensitivity | 0% at 353 N |
| Standard particle sizes | class 1 to class 4 |
| Specific grades available on request | |

# PETN

More sensitive to shock and friction than standard explosives

## SPECIFICATIONS

STANAG 4023

## APPLICATION

Detonating cords and cutting charges for mining

Plastic explosive for demolition, demilitarization and main fill for hand grenades

Initiation and booster charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,76 |
| Detonation velocity | 8 400 m/s (1,7 g/cm$^3$) |
| Impact sensitivity | 3 J |

# ADN

Strong oxidizer and high impulse

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Ingredient in composite rocket motor propellants and depth charges for underwater ammunition

Liquid mono propellant for rocket motors used in spacecraft propulsion

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,81 |
| Detonation velocity | approx. 7 000 m/s |
| Heat of formation | -35,8 kJ/mole |
| 3 grades | crystalline, prilled and coated, ultra pure |
| Green product | no HCL release |

# GAP DIOL

Energetic polymer used as a binder

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

High energetic composite rocket propellant grains
Insensitive charges and LOVA propellants for ammunition
Gas generators for automotive safety

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,24 - 1,29 |
| Combustion velocity | 488 mm/s |
| Mean molecular weight | ≈ 2000 |

# TNC

Ignition and thermostability

## SPECIFICATIONS

MIL-T-13723

## APPLICATION

Ignition composition for ammunition

Catalyst for airbags' combustion (automotive safety)

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Melting point | 290 / 295 °C |
| Self ignition temperature | 378 °C |

# TNR

Ignition

## SPECIFICATIONS

MIL-T-50611

## APPLICATION

Precursor for primers compositions for small caliber

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,83 |
| Self ignition temperature | 252 °C |
| TNR type 1 (P) and type 2 (W) | |

# DNBF

Ignition and thermostability

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Green replacement of TNR

Precursor for primers compositions for small caliber

Primary explosive for airbag initiators, sealing charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,77 |
| Detonation velocity | 7 700 – 7 900 m/s |
| Self ignition temperature | 378 °C |
| Purity | class 2 (> 97%) and class 3 (> 95%) |


# EXPLOSIVES
# DEFENSE & SECURITY

EXPLOSIVES

# DEFENSE & SECURITY

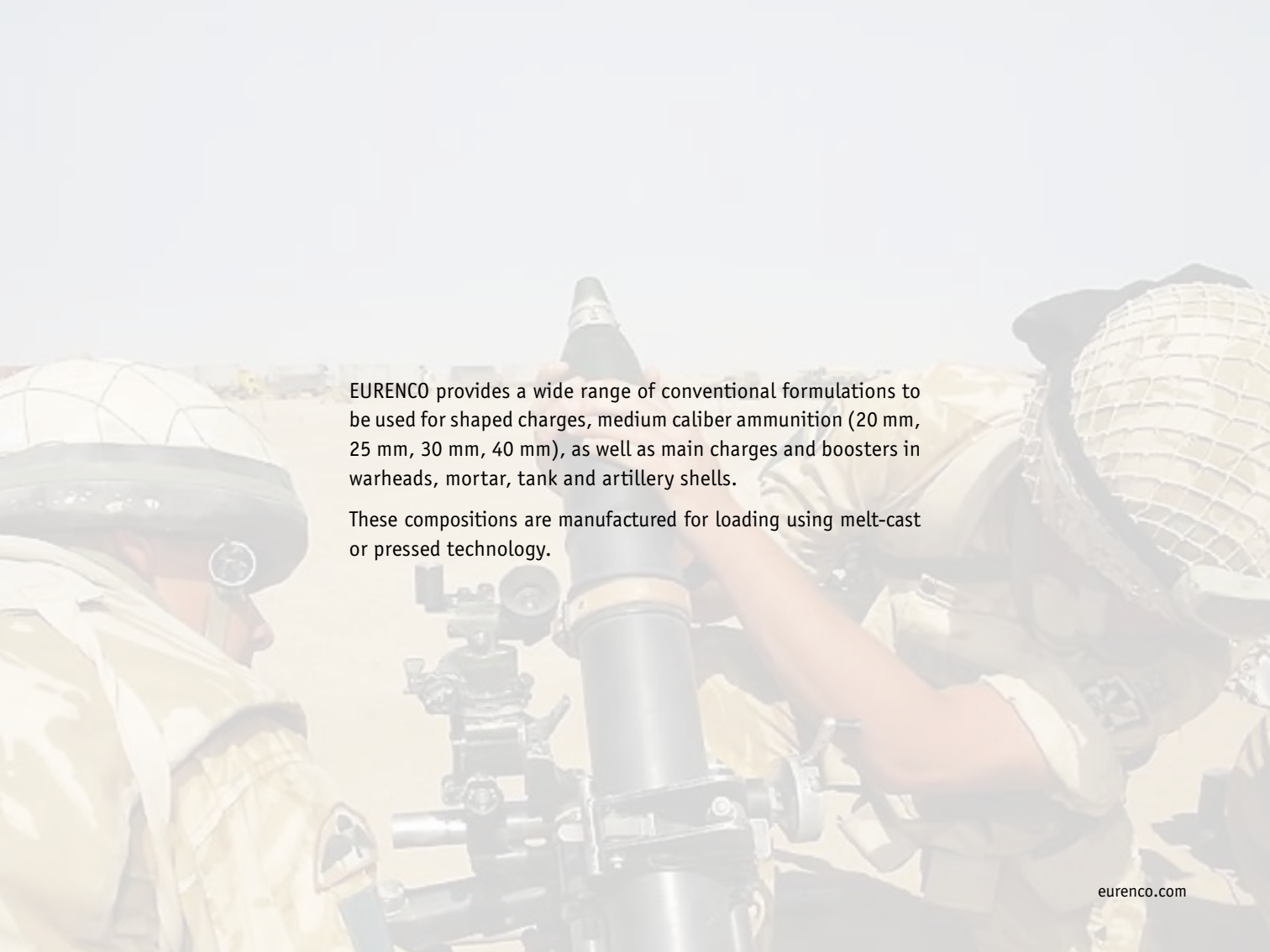
For the Defense & Security market, EURENCO develops and produces specific explosive compositions and formulations for melt-cast, pressed and cast-PBX applications in main charges and boosters:

- Conventional compositions for medium caliber, warheads, artillery, tank and mortar ammunition;
- Insensitive compositions for the loading of Insensitive Munitions;
- Demolition explosives for explosive ordnance disposal as well as demolition, cutting and breaching operations.

EXPLOSIVES

DEFENSE & SECURITY

# CONVENTIONAL COMPOSITIONS



EURENCO provides a wide range of conventional formulations to be used for shaped charges, medium caliber ammunition (20 mm, 25 mm, 30 mm, 40 mm), as well as main charges and boosters in warheads, mortar, tank and artillery shells.

These compositions are manufactured for loading using melt-cast or pressed technology.

# COMP B

RDX / TNT

## SPECIFICATIONS

MIL-C-401

## APPLICATION

Melt-cast or pressed compositions for main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,71 |
| Detonation velocity | 7 900 m/s |
| Grades | Granular form |
| Low viscosity | < 7 s |

# HEXOTOL

RDX / TNT

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Melt-cast compositions for main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,65 - 1,71 |
| Detonation velocity | 7800 - 8000 m/s |
| Grades | Granular form |
| Ingredient ratio adapted to required performance | |

# OCTOL

HMX / TNT

## SPECIFICATIONS

MIL-O-45445B

## APPLICATION

Melt-cast composition for high performance warheads and shaped charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,805 - 1,81 |
| Octol type 1 | Class 1 |
| Octol type 2 | Class 1 and 2 |
| Ingredient ratio adapted to required performance | |

# COMP A3 / A4 / A5

RDX / Wax or Binder

## SPECIFICATIONS

A3/A4: MIL-C-440

A5: MIL-E-14970

## APPLICATION

Pressed composition for boosters and main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,61 for Comp A3 |
| Detonation velocity | 8470 m/s for Comp A3 |

# PBXN-3

HMX / Nylon

## SPECIFICATIONS

MIL-E-82738

## APPLICATION

Pressed composition for main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,73 |
| Detonation velocity | 8370 m/s |
| Grades | white granules |

# CH-6

RDX / Binder

## SPECIFICATIONS

MIL-C-21723

## APPLICATION

Pressed composition for boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,64 |
| Detonation velocity | 8070 m/s |

# HEXOWAX

RDX / Wax or Binder

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Pressed composition for main charges and boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,71 - 1,73 |
| Detonation velocity | 8350 - 8450 m/s |
| Ingredient ratio adapted to required performance | |

# PBXW-17

RDX / Polyacrylate

## SPECIFICATIONS

MIL-DTL-32057 (OS)

## APPLICATION

Pressed composition for shaped charges and boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | > 1,66 |
| Detonation velocity | 8100 m/s |

# PBXN-5

HMX / Viton

## SPECIFICATIONS

MIL-E-81111

## APPLICATION

Pressed composition for boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,86 |
| Detonation velocity | 8800 m/s |
| Grades | white granules |

# PBXW-11

HMX / Polyacrylate

## SPECIFICATIONS

DTL-WS-33500

## APPLICATION

Pressed composition for shaped charges and boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,80 - 1,83 |
| Detonation velocity | 8820 m/s |

# OCTOWAX

HMX / Wax or Viton

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Pressed composition for high performance warheads and shaped charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,78 - 1,86 |
| Detonation velocity | 8800 m/s |

EXPLOSIVES

DEFENSE & SECURITY

# INSENSITIVE COMPOSITIONS

EURENCO develops insensitive formulations to be used in boosters and main charges by warheads and ammunition manufacturers.

In addition to melt-cast and pressed compositions, EURENCO also provides standard Cast PBX formulations, ready to use, specifically for the loading of Insensitive Munitions (medium and large caliber ammunition, missile and torpedo warheads, underwater mines, aircraft bombs...).

EURENCO is also equipped with both high-tech and cost-effective loading facilities, and contributes to the development of new Insensitive Munitions, in partnership with customers.

# ONTALITES

NTO / TNT

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

IM melt-cast composition for main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,77 - 1,81 |
| Detonation velocity | 7600 - 7900 m/s |
| Ingredient ratio adapted to customer application | Addition of RDX to insure high performance<br>With or without aluminium |

# GUNTOL

GUDN (FOX-12) / TNT

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

IM melt-cast composition for main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,65 |
| Detonation velocity | 6800 m/s |
| Possibility to add RDX or HMX - with or without alumunium - for higher performance | |

# FOX-7 COMPOSITION

FOX-7 / Viton

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

IM pressed composition for boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8362 m/s |
| Critical diameter | < 5 mm |
| Shock sensitivity | 31 kbars |

# PBXN-7

TATB / RDX

## SPECIFICATIONS

MIL-DTL-82744

## APPLICATION

IM pressed composition for boosters

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,78 |
| Detonation velocity | 7770 m/s |
| Critical diameter | 2,5 - 3,8 mm |
| Shock sensitivity | 20 kbars |

# V350

TATB / HMX

## SPECIFICATIONS

STANAG 4170

## APPLICATION

IM pressed composition for boosters and main charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,887 |
| Detonation velocity | 8170 m/s |

# P16945

NTO / RDX

## SPECIFICATIONS

STANAG 4170

## APPLICATION

IM pressed composition for boosters and main charges

IM equivalent to comp A3

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,84 |
| Detonation velocity | 8350 m/s |
| Critical diameter | 5 - 7 mm |
| Shock sensitivity | > 25 kbars |

# P15636

NTO / HMX

## SPECIFICATIONS

STANAG 4170

## APPLICATION

IM pressed composition for high performance boosters

IM equivalent to PBXN-5

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,871 |
| Detonation velocity | 8416 m/s |
| Critical diameter | < 5 mm |

# CAST PBX COMPOSITIONS FOR INSENSITIVE MUNITIONS

EURENCO offers one of the world's widest range of Cast PBX solutions. This extensive know-how is the outcome of continuous research effort and experience acquired over 40 years to render munitions insensitive to accidental or intentional threats (fuel fire, bullet impact, metallic fragment, drop, shock, etc.).

Thanks to these assets, EURENCO has become one of the key players in the field of Cast PBX technology for Insensitive Munitions, and highly contributes to fulfil the new Armed Forces' needs to:

- Reduce the vulnerability of combat platforms, warehouses and storage plants,
- Ensure total personnel safety,
- Increase performance of weapon systems,
- Lower operating and life cycle costs.

Furthermore, EURENCO is equipped with a complete range of cost-effective high-tech manufacturing processes:

- Unique and revolutionary "bi-component" process for continuous production of shell ammunition,
- Batch process for serial production of warheads, bombs and penetrators, torpedoes and underwater mines.

# DEFENSE & SECURITY

INSENSITIVE COMPOSITIONS

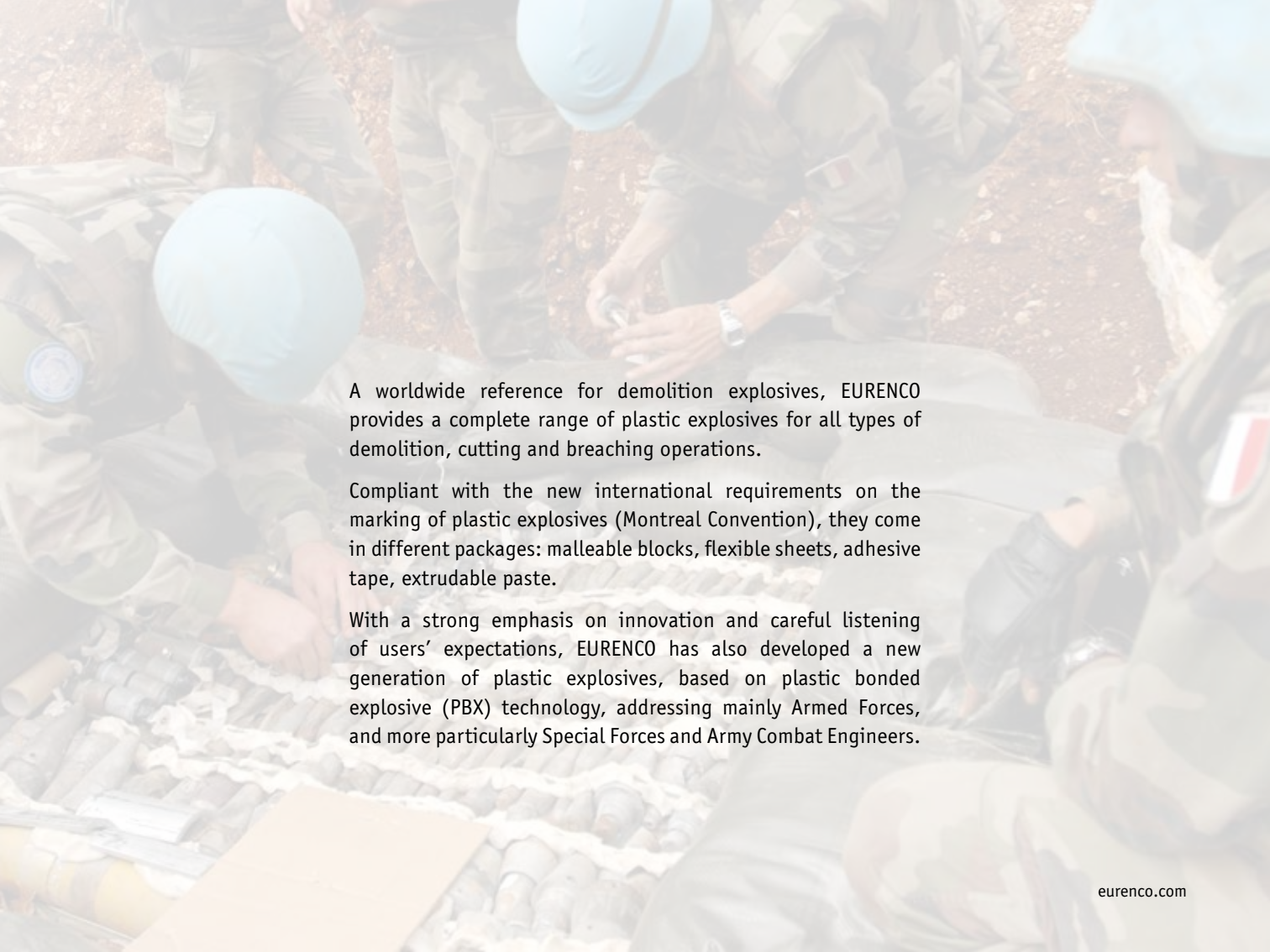
## Qualified according to STANAG 4170

| REFERENCES | MAIN INGREDIENTS | DENSITY | DETONATION VELOCITY (M/S) | MAIN APPLICATIONS |
|---|---|---|---|---|
| **RDX BASED FORMULATIONS** | | | | |
| B 2211 | I-RDX® / AP / Al, IB | 1.81 | 5500 | Underwater Mines and Torpedoes - Enhanced Blast Warheads |
| B 2238 | RDX, IB | 1.57 | 8040 | Booster - Missile Warheads - Shells |
| B 2245 | I-RDX® / NTO / AP / Al, IB | 1.81 | 5150 | Underwater Mines and Torpedoes |
| B 2258 | I-RDX® / AP / Al, IB | 1.67 | 7100 | Missile Warheads |
| B 2263 (HBU 88) | I-RDX®, IB | 1.63 | 8150 | Missile Warheads - Shells |
| B 2265 | I-RDX®, IB | 1.65 | 8290 | Missile Warheads - Shells |
| B 2271 | I-RDX® / Al, IB | 2.42 | 5800 | Enhanced Blast Formulation For Dual Charges |
| B 2274 | RDX / ADD / Al, IB | 1.67 | 5500 | Low Collateral Damage Munitions |
| B 2276 | RDX, IB | 1.66 | 8300 | Booster Explosive |
| PBXN-109 | I-RDX® / Al, IB | 1.65 | 7600 | General Purposes Bombs and Penetrators |
| **HMX BASED FORMULATIONS** | | | | |
| B 2188 | HMX / PETN, IB | 1.62 | 7900 | Booster Explosive - Safety Device |
| B 2237 | HMX / AP / Al, IB | 1.71 | 7330 | Missile Warheads |
| B 2250 | HMX / AP / Al, IB | 1.80 | 6400 | Enhanced Blast General Purposes Bombs or Penetrators |
| B 2273 | HMX, IB | 1.72 | 8490 | Missile Warheads |
| B 3108 | HMX / Al, EB | 1.82 | 7830 | Missile Warheads |
| ORA 86 | HMX, IB | 1.70 | 8350 | Missile Warheads - Shaped Charges |
| PBX 80/20 | HMX, IB | 1.66 | 7970 | Shells |
| PBXN-110 | HMX, IB | 1.68 | 8300 | Missile Warheads - Shaped Charges |
| **NTO BASED FORMULATIONS** | | | | |
| B 2214 | HMX / NTO, IB | 1.63 | 7450 | General Purposes Bombs and Penetrators |
| B 2248 | HMX / NTO, IB | 1.69 | 8050 | Missile Warheads |
| B 2267 | I-RDX® / NTO, IB | 1.65 | 7570 | Shells |
| B 2268 | I-RDX® / NTO / Al, IB | 1.76 | 7200 | General Purposes Bombs and Penetrators |
| **CL-20 BASED FORMULATIONS** | | | | |
| B 2266 | CL-20, IB | 1.85 | 9050 | Shaped Charges |

EXPLOSIVES

DEFENSE & SECURITY

# DEMOLITION EXPLOSIVES



A worldwide reference for demolition explosives, EURENCO provides a complete range of plastic explosives for all types of demolition, cutting and breaching operations.

Compliant with the new international requirements on the marking of plastic explosives (Montreal Convention), they come in different packages: malleable blocks, flexible sheets, adhesive tape, extrudable paste.

With a strong emphasis on innovation and careful listening of users' expectations, EURENCO has also developed a new generation of plastic explosives, based on plastic bonded explosive (PBX) technology, addressing mainly Armed Forces, and more particularly Special Forces and Army Combat Engineers.

# C4

Malleable and safe to handle

## SPECIFICATIONS

MIL-C-45010A

Compliant with Montreal Convention

## APPLICATION

Demilitarization, demolition and breaching operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,65 |
| Detonation velocity | 8 100 m/s |
| Supplied in bulk or packages | from 0.5 kg up to 2 kg |
| RDX-based formulation | |

# PE4

Malleable and safe to handle

## SPECIFICATIONS

STANAG 4439

Compliant with Montreal Convention

## APPLICATION

Demilitarization, demolition and breaching operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,65 |
| Detonation velocity | 8 200 m/s |
| Supplied in bulk, packages | from 0.5 kg up to 2 kg<br>or 125 g cartridges |
| RDX-based formulation | |

# PE10

Easy to ignite and shape even at low temperature (“polar dough”)

## SPECIFICATIONS

Compliant with Montreal Convention

## APPLICATION

Demilitarization, demolition and breaching operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,5 |
| Detonation velocity | 7 600 - 7 900 m/s |
| Ignitability | cap #6 or cord 5 gr/m² |
| Explosive heat | 5 MJ/kg |
| PETN-based formulation | |

# HEXOMAX

Outstanding malleability at all temperatures
No exsudation, no hardening

## SPECIFICATIONS

Compliant with Montreal Convention

## APPLICATION

Demilitarization, demolition and breaching operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,5 |
| Detonation velocity | 7 850 m/s |
| Plasticity (GEMO FE-371-A-1 test) | ≤ 8 |
| Temperature of use | - 40 °C to + 63 °C |
| RDX-based formulation | |

# HEXOSHEET

Easy to handle and cut manually

## SPECIFICATIONS

Compliant with Montreal Convention

## APPLICATION

Demolition, breaching and cutting operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,58 |
| Detonation velocity | 8 000 m/s |
| Temperature of use | - 40 °C to + 63 °C |
| Thickness | ≥ 3 mm |
| RDX-based formulation | |

# FORMEX

Flexible sheet

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Demolition, breaching and cutting operations

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | from 1,2 to 1,4 |
| Detonation velocity | ≥ 6 200 m/s |
| 10 different thicknesses | from 1 mm to 10 mm |
| PETN-based formulation | |

# HEXOTAPE

Easy to handle, double-sided adhesive and explosive tape

## SPECIFICATIONS

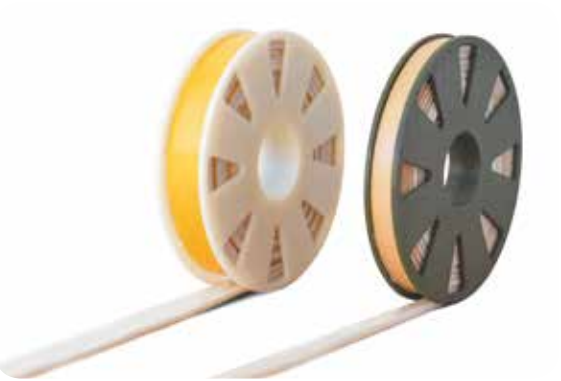
Compliant with Montreal Convention

## APPLICATION

Suitable for cutting works and openings (barriers, doors, scrap metal...)

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,58 |
| Detonation velocity | 8 000 m/s |
| Temperature of use | - 40 °C to + 63 °C |
| Available in 8 mm and 15 mm wide | |
| RDX-based formulation | |



# HEXOTUBE

Extrudable plastic explosive to be used with an extruder-applicator

## SPECIFICATIONS

Compliant with Montreal Convention

## APPLICATION

Demolition, breaching and cutting operations

Suitable for surfaces hard to reach:
corners, angles, key-holes...

Does not dry up after opening

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,58 |
| Detonation velocity | 8 000 m/s |
| Temperature of use | + 20 °C to + 63 °C |
| Available in 200 g or 500 g cartridges | |
| RDX-based formulation | |

EXPLOSIVES

# OIL & GAS



EXPLOSIVES

# OIL & GAS

Using its thorough experience in high explosives and propellants for the military market, EURENCO produces high quality and high thermal stability explosives suited for the Oil & Gas Industry, which are extensively used in shaped charges for perforating guns in well completion.

Heat resistance is an important characteristic of the explosives used for perforating deep oil wells, since the temperature in a drilled hole increases with the depth. The same requirements exist in the gas industry.

For many years, EURENCO has worked in close partnership with shaped charge manufacturers, and has constantly applied itself to extend applications for its products through its development and production means. Today, EURENCO continues to provide high explosives for such perforating charges.

# RDX COMPOSITION

Best solution for both performance and cost

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignition and main explosive for shaped charges for perforating guns in standard well completion

Customized flowability while minimizing dusting properties

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8 750 m/s |
| Melting point | 204°C |
| Heat of combustion | -2 092.0 ± 2.1 kJ/mol |
| Volume of detonating gases | 900 l/kg |

# HMX COMPOSITION

Highly purified HMX for high thermal stability and low shock sensitivity

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignition and main explosive for shaped charges for perforating guns in deep well completion

Designed to meet the highest requirements of the Oil & Gas Industry

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,90 |
| Detonation velocity | 9 100 m/s |
| Melting point | 287 °C |
| Heat of combustion | -2 820 ± 2.8 kJ/mol |
| Volume of detonating gases | 927 l/kg |

# HNS COMPOSITION

Very high thermal stability and good initiation reliability

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignition and main explosive for shaped charges for perforating guns in very deep well completion

Can withstand temperatures around 250 - 300 °C for periods of time

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,74 |
| Detonation velocity | 7 000 to 7 100 m/s |
| Melting point | 316 – 318 °C |
| Heat of combustion | -6 434.2 ± 5.0 kJ/mol |
| Volume of detonating gases | 700 l/kg |

# RDX PE-COATED

RDX coated with polyethylene for increased density and performance

## SPECIFICATIONS

UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignition and main explosive for shaped charges for perforating guns in standard well completion

Improves electrostatic, loading and pressing properties of the crystals

Approximately 100% lower impact sensitivity compared with waxed product

Latest technology patented by EURENCO

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8 750 m/s |
| Melting point | 204 °C |
| Heat of combustion | -2 092 ± 2.1 kJ/mol |
| Volume of detonating gases | 900 l/kg |

# HMX PE-COATED

Highly purified HMX coated with polyethylene
for high thermal stability and significantly reduced shock sensitivity

## SPECIFICATIONS

UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

High performance leader on the market

Ignition and main explosive for shaped charges for perforating guns in deep well completion

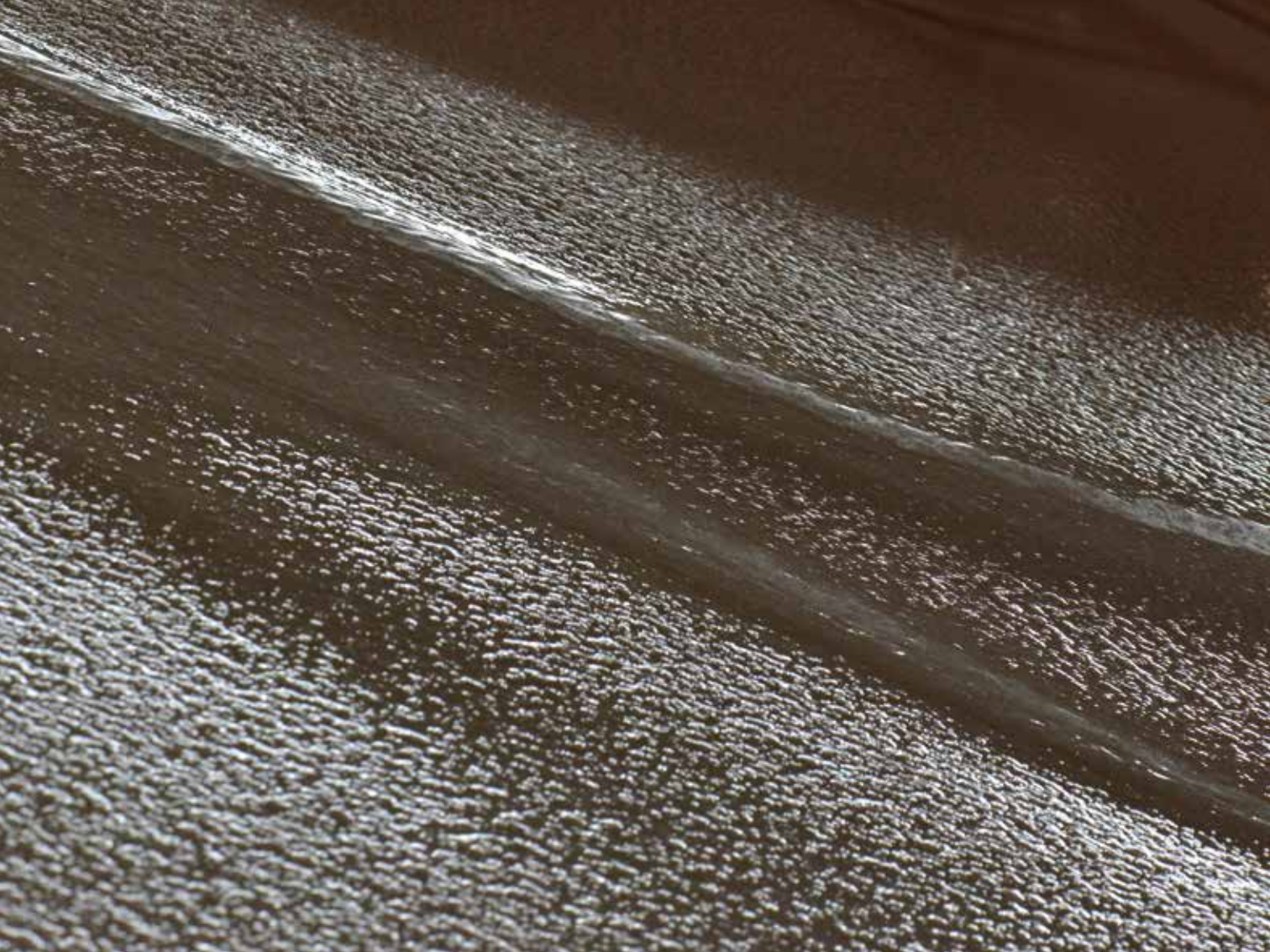
Improves electrostatic, loading and pressing properties of the crystals

Approximately 100% lower impact sensitivity compared with waxed product

Latest technology patented by EURENCO

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,90 |
| Detonation velocity | 9 100 m/s |
| Melting point | 287 °C |
| Heat of combustion | -2 820 ± 2.8 kJ/mol |
| Volume of detonating gases | 700 l/kg |



# EXPLOSIVES
# MINING

EXPLOSIVES

# MINING

EURENCO's explosives also find applications in the Mining & Quarrying industry, as it provides both purified HMX for shock tubes and mini-boosters for ignition charges.

They are used to ignite slurries and emulsion to full detonation, by giving the energy impulse necessary to initiate larger charges.

As an explosive manufacturer, EURENCO also provides RDX and PETN as raw material for all types of initiation devices.

# X-DOUGH

Malleable, easy to ignite and cost-efficient PETN-based plastic explosive

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

Compliant with Montreal Convention

## APPLICATION

Softer than C4, easier to shape even at low temperature ("polar dough")

Adhesion to vertical surfaces

Civil and law enforcement applications for ignition (booster), mine destruction, demilitarization and demolition work

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,5 |
| Detonation velocity | 7 600 - 7 900 m/s |
| Ignitability | cap #6 or cord 5 gr/m² |
| Explosive heat | 5 MJ/kg |
| Static spark sensibility | > 726 mJ |
| Impact sensitivity | 25 J |
| Deflagration onset | 180 °C |

# X-PIPE

Mini-booster for detonators

## SPECIFICATIONS

UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

Compliant with Montreal Convention

## APPLICATION

Filled with 12 grams of X-DOUGH

Diameter: 11 mm ; Length: 130 mm

Gives the energy impulse necessary to initiate larger charges

Ignites slurries and emulsions to full detonation

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,45 |
| Detonation velocity | 7 600 - 7 900 m/s |
| Ignitability | cap #6 |
| Explosive heat | 5 MJ/kg |
| Static spark sensibility | > 726 mJ |
| Impact sensitivity | 25 J |
| Deflagration onset | 180 °C |

# HMX

Purified fine crystallized HMX for shock tubes

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

High quality shock tubes for mining and quarrying applications

Ensures continuous transmission of shock waves and allows non-interrupted conductibility to ignition of charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,90 |
| Detonation velocity | 9 100 m/s |
| Melting point | 277 °C |
| Heat of combustion | -2 820 ± 2.8 kJ/mol |
| Volume of detonating gases | 700 l/kg |

# PETN

Pure PETN crystals for high performance

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignitors and detonating cords

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,76 |
| Detonation velocity | 7 600 - 7 900 m/s |
| Explosive heat | 5 MJ/kg |
| Static spark sensibility | > 726 mJ |
| Impact sensitivity | 25 J |
| Deflagration onset | 180 °C |
| Wide range of particle sizes distribution | |

# RDX WAX

Highly purified RDX coated with wax

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Ignitors and detonating cords

Optimized for large scale automatic dosing and pressing of charges

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8 750 m/s |
| Melting point | 204 °C |
| Heat of combustion | -2 092 ± 2.1 kJ/mol |
| Volume of detonating gases | 900 l/kg |

# PETN PE-COATED

PETN coated with polyethylene for low sensitivity and high flowability

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Electrical and non-electrical detonators

Booster charges

Approximately 100% lower impact sensitivity compared with waxed product

Latest technology patented by EURENCO

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,76 |
| Detonation velocity | 8 400 m/s |
| Melting point | 140 °C |
| Heat of combustion | -2 572,4 ± 0.8 kJ/mol |
| Volume of detonating gases | 823 l/kg |
| Cost advantage | can be transported dry |

# RDX PE-COATED

RDX coated with polyethylene for increased density and performance

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

Compliant with Montreal Convention

## APPLICATION

Electrical and non-electrical detonators

Booster charges

Improves electrostatic, loading and pressing properties of the crystals

Approximately 100% lower impact sensitivity compared with waxed product

Latest technology patented by EURENCO

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,82 |
| Detonation velocity | 8 750 m/s |
| Melting point | 204 °C |
| Heat of combustion | -2 092 ± 2.1 kJ/mol |
| Volume of detonating gases | 900 l/kg |

# HNS

Small crystals, good flowability

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

## APPLICATION

Detonators

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,74 |
| Detonation velocity | 7 000 - 7 100 m/s |
| Melting point | 316 - 318 °C |
| Heat of combustion | -6 434,2 ± 5.0 kJ/mol |
| Volume of detonating gases | 700 l/kg |

# DNBF

## Ignition and thermostability

### SPECIFICATIONS

According to EURENCO spec.

### APPLICATION

Primers compositions for initiation in detonators

### TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,77 |
| Detonation velocity | 7 700 - 7 900 m/s |
| Melting point | 168 - 172 °C |
| Auto-ignition | 268 °C (progressive heating) |
| Sensitivity to friction | 314 N (HMX: 150 N) |

# TNC

Thermostability

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

Primers compositions for initiation in detonators

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Melting point | 290 - 295 °C |
| Explosion heat | 300 kJ/kg |
| Auto-ignition | ≥ 200 °C |
| Solubility in toluene | |
| Insolubility in water and acetone | |

EXPLOSIVES

# SPACE

EXPLOSIVES

# SPACE



EURENCO manufactures high purity ADN, used as an oxidizer in liquid mono-propellant for rocket engines in space applications.

LMP-103S fulfills space propulsion requirements, and compared with hydrazine, it is less toxic and brings higher performance. Hence reducing fueling cost and tank volumes, and enabling extended missions.

First tested by ECAPS (Swedish Space Corporate Group) in the PRISMA satellite in 2010.

# LMP-103S

Replacement of hydrazine as monopropellant

## SPECIFICATIONS

Demonstrated on the Prisma satellite in 2010

Patented by ECAPS together with HPGP thrusters

UN and DOT Class 1.4S

## APPLICATION

Environmental friendly liquid monopropellant fuel for space applications in High Performance Green Propulsion (HPGP)

## TECHNICAL CHARACTERISTICS

65% ADN (ammonium dinitramide)

35% water solution made up of methanol and ammonia

6% higher specific impulse and 30% higher impulse density than hydrazine monopropellant

# ADN

New energetic oxidizer in solid and liquid propellants

## SPECIFICATIONS

UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

Compliant with Montreal Convention

## APPLICATION

High detonation velocity and increased performance due to higher bubble energy

Possible replacement for ammonium perchlorate (AP)

Can be supplied as crystals or “prills” (spherical particles)

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Density | 1,81 |
| Detonation velocity | ≈ 7 000 m/s |
| Melting point | 92 °C |
| Heat of combustion | 980 kJ/mol |
| Auto-ignition | 160 °C |

EXPLOSIVES

# RAIL HARDENING

EXPLOSIVES

# RAIL HARDENING

EURENCO manufactures an explosive specifically designed for rail hardening, according to characteristics defined by rail equipment companies.

EURENCO also developed its own techniques to apply explosive for this application, and provides all necessary services related to the completion of this work: reception and preparation of railway tracks, application of custom-made explosive sheet, and detonation.

EURENCO has the advantage of being able to rely on its Baussenq facility, providing access to both storage and a detonating range.

# CORE TREATMENT

Hardening of rail crossings by explosion

## SPECIFICATIONS

15 years of experience

(400 blasts / year)

## APPLICATION

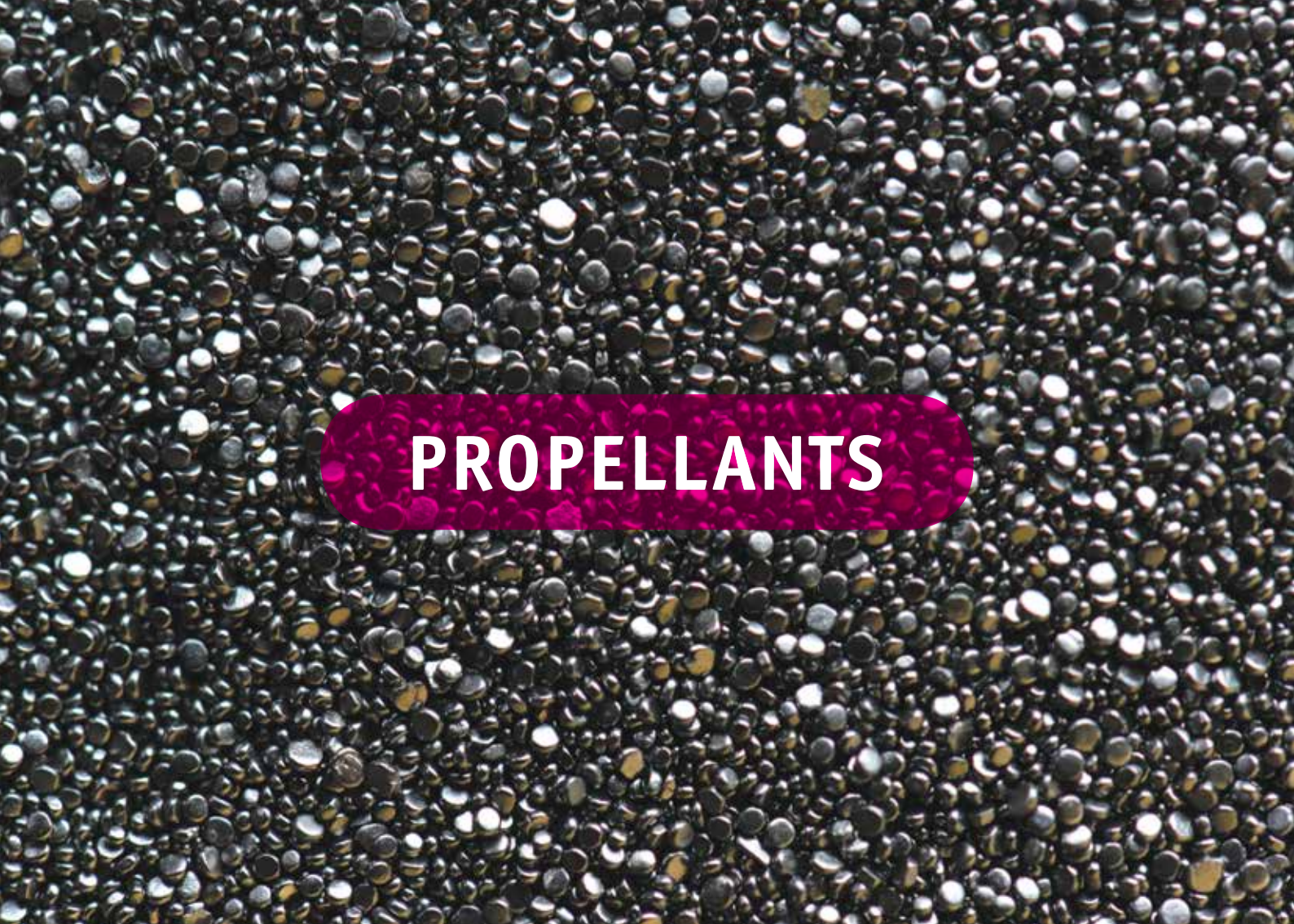
Thin and flexible explosive sheets suitable for all types of crossing designs: tailor-made according to blue prints provided by customers

High and even hardness 10 - 15 mm into the material, inducing excellent wear resistance

No geometric distortions or strains, and minimum flaws on the surface

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| High performance explosive (RDX-based) | |
| Detonation velocity | 8000 m/s |
| Detonation pressure | 25,1 GPa |
| Up to 12 possible core treatments everyday | |


PROPELLANTS

# PROPELLANTS

Drawing on a long skilled experience in propellants, EURENCO manufactures a wide range of single and multi base propellants for both civil and military applications:

- **Single and multi base propellants** for small to large caliber military ammunition, mortar increments, recoilless antitank weapons, reloading powders and hunting & sporting cartridges;
- **Low vulnerability (LOVA) propellants** for insensitive propelling charges;
- **Spherical powders** for military small arms ammunition, hunting & sporting cartridges and industrial tools.

EURENCO also produces military grades of nitrocellulose used in the manufacturing process of single and multi base propellants, as well as combustible cases.

**PRODUCTION PLANTS**

Clermont (Belgium)
Karlskoga (Sweden)

**COMMERCIAL OFFICE**

Paris (France)
Washington DC (USA)



eurenco.com

PROPELLANTS

# SMALL CALIBER

PROPELLANTS

# SMALL CALIBER

EURENCO manufactures both single base propellants and spherical powders to cover the entire range of small caliber ammunition:

- Single base propellants for .22 inch to 12.7 mm calibers;
- Spherical powders for 4.6 mm to 20 mm small arms.

5.56 and 5.7 calibers are almost exclusively loaded with spherical powders, due to a small filling orifice and limited space allocated to the propellant.

# RIFLE POWDER

High performance and high energy extruded and spherical propellants

## SPECIFICATIONS

STANAG 4170

UN and DOT approved

CE-marking

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

## APPLICATION

Customized to maximize the performance of the customers' chosen components

All civil and military rifle calibers, from 0.22 up to 20 mm

## TECHNICAL CHARACTERISTICS

1-perforated propellant grains

Propellant compositions with up to 15% of nitroglycerine

Spherical powders of different densities and cylindrical grains, all with various burning moderator, flash reducer and decoppering agents

Green propellants for green applications

# PISTOL POWDER

Wide range of spherical and porous fast burning propellants

## SPECIFICATIONS

UN and DOT approved

CE-marking

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

## APPLICATION

For all types and calibers of pistol ammunition

Capability to design tailored products

## TECHNICAL CHARACTERISTICS

Stick or 1-perforated grains

Single base or double base propellant compositions

Spherical powders of various densities

# SHOTSHELL POWDER

Huge selection of different types of porous propellants and spherical powders

## SPECIFICATIONS

UN and DOT approved

CE-marking

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

## APPLICATION

For shot shell ammunition of all calibers

Performance according to customer request

## TECHNICAL CHARACTERISTICS

Stick, flake or T-shaped grains

Single base or double base propellant compositions

Low density spherical graphitized propellant

# RELOADING POWDERS

High energy propellants with superior velocity and accuracy

## SPECIFICATIONS

UN and DOT approved

CE-marking

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

## APPLICATION

Extruded propellants for all types of reloading powders

Spherical powders to be found in Ramshot range

## TECHNICAL CHARACTERISTICS

- Spherical and 1-perforated grains
- Single base or double base propellant compositions
- Extreme lot to lot consistency
- Minimal barrel wear and excellent flow-ability for easy reloading

PROPELLANTS

# MEDIUM CALIBER

PROPELLANTS

# MEDIUM CALIBER

EURENCO provides single and multi base propellants for medium caliber ammunition ranging from 30 mm to 57 mm, as well as their igniters.

# PROPELLANTS FOR MEDIUM CALIBER

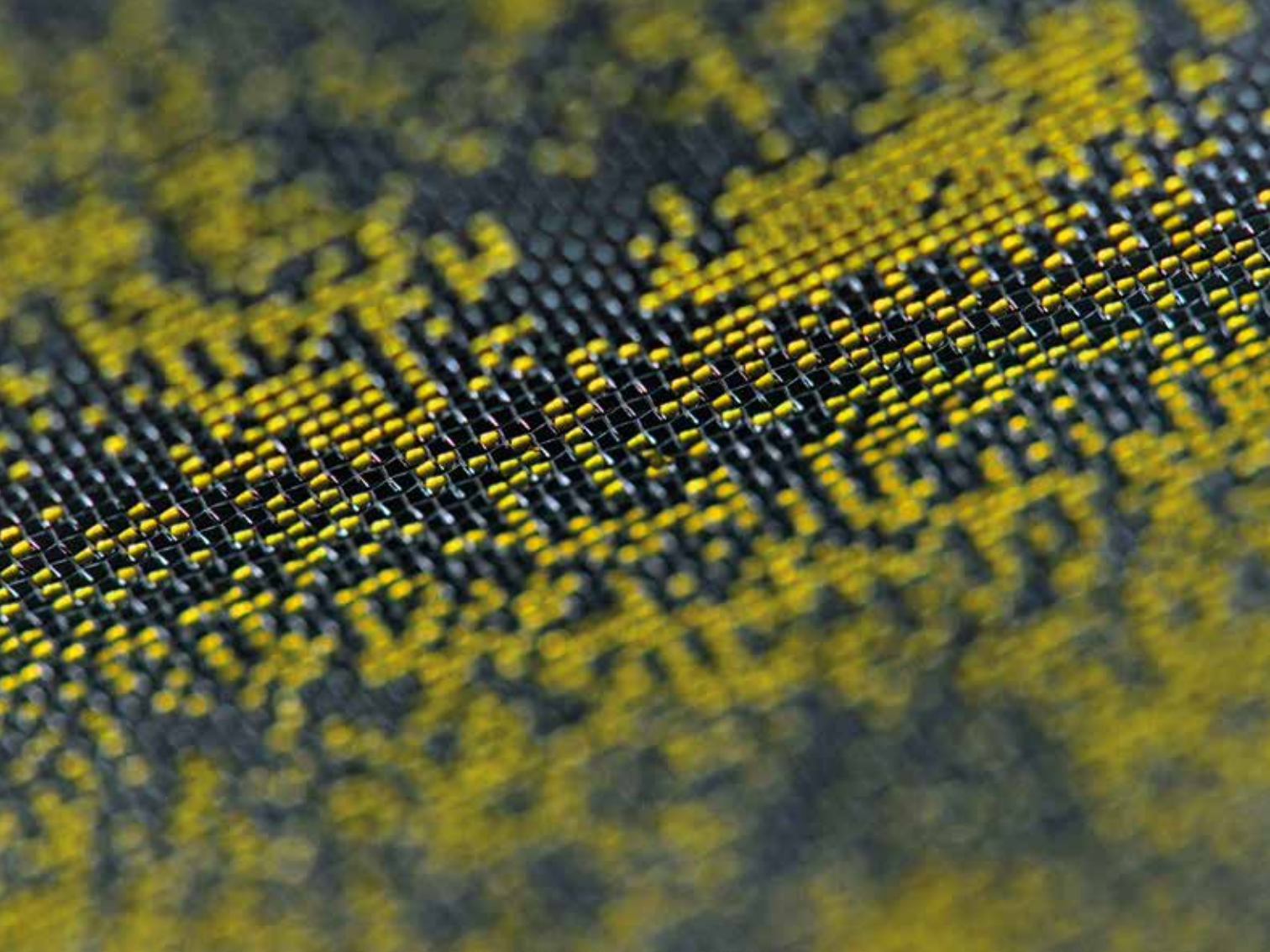
Single and multi base propellants for medium caliber ammunition ranging from 30 mm to 57 mm, and their igniters

| APPLICATION | TECHNICAL CHARACTERISTICS |
|---|---|
| 30 mm | - Single or multi perforated propellant grains<br>- Single base or double base propellant compositions |
| 40 mm | - 1-perforated propellant grains<br>- Single base or double base propellant compositions |
| 40 mm LOVA | - 19-perforated LOVA propellant grains<br>- Based on RDX and CAB compositions |
| 57 mm | - 1-perforated propellant grains<br>- Single base or double base propellant compositions |
| 57 mm LOVA | - 19-perforated LOVA propellant grains<br>- Based on RDX and CAB compositions |

## SPECIFICATIONS

UN No. classified

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU



PROPELLANTS

# LARGE CALIBER

PROPELLANTS

# LARGE CALIBER

With regards to large caliber, EURENCO provides:

- Single and multi base propellants for naval, tank and field artillery ammunition (76 mm to 203 mm), mortar increments (60 mm, 81 mm and 120 mm), and recoilless antitank weapons;
- Spherical powders for mortar increments (60 mm and 81 mm).

EURENCO is also able to supply double base or multi base propellant paste according to customer request.

# ANTI-TANK PROPELLANT

Various recoilless antitank systems

## APPLICATION

For all types of recoilless antitank systems

## TECHNICAL CHARACTERISTICS

- Flake or strip
- Double base propellant compositions
- Dimensions according to customer request

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

# MORTAR PROPELLANT

60 mm, 81 mm and 120 mm

## APPLICATION

## TECHNICAL CHARACTERISTICS

| APPLICATION | TECHNICAL CHARACTERISTICS |
|---|---|
| For 60 mm and 81 mm mortar ammunition | - Flake<br>- Double base propellant compositions<br>- Spherical powders used in primary and secondary charges |
| For 120 mm mortar ammunition | - 1-perforated grains<br>- Single and double base propellant compositions<br>- Dimensions according to customer request |

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

# ARTILLERY PROPELLANT

105 mm and 155 mm

| APPLICATION | TECHNICAL CHARACTERISTICS |
|---|---|
| For 105 mm artillery guns | - Single or multiperforated grains<br>- Single, double or multi base propellant compositions<br>- Dimensions according to customer request |
| For 155 mm artillery guns | - Single or multiperforated grains or sticks<br>- Single, double or multi base propellant compositions<br>- Dimensions according to customer request |

## SPECIFICATIONS

UN and DOT approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

# TANK PROPELLANT

90 mm, 105 mm and 120 mm

## APPLICATION

For 90 mm, 105 mm and 120 mm tank ammunition

## TECHNICAL CHARACTERISTICS

- Single or multi perforated grains or sticks
- Single, double or multi base propellant compositions
- Dimensions according to customer request

## SPECIFICATIONS

UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

# ROCKET PROPELLANT

Rockets and missiles

## APPLICATION

For different types of rockets and missiles

## TECHNICAL CHARACTERISTICS

- Rods or tubes
- Double base or multi base propellant compositions
- Dimensions according to customer request

## SPECIFICATIONS

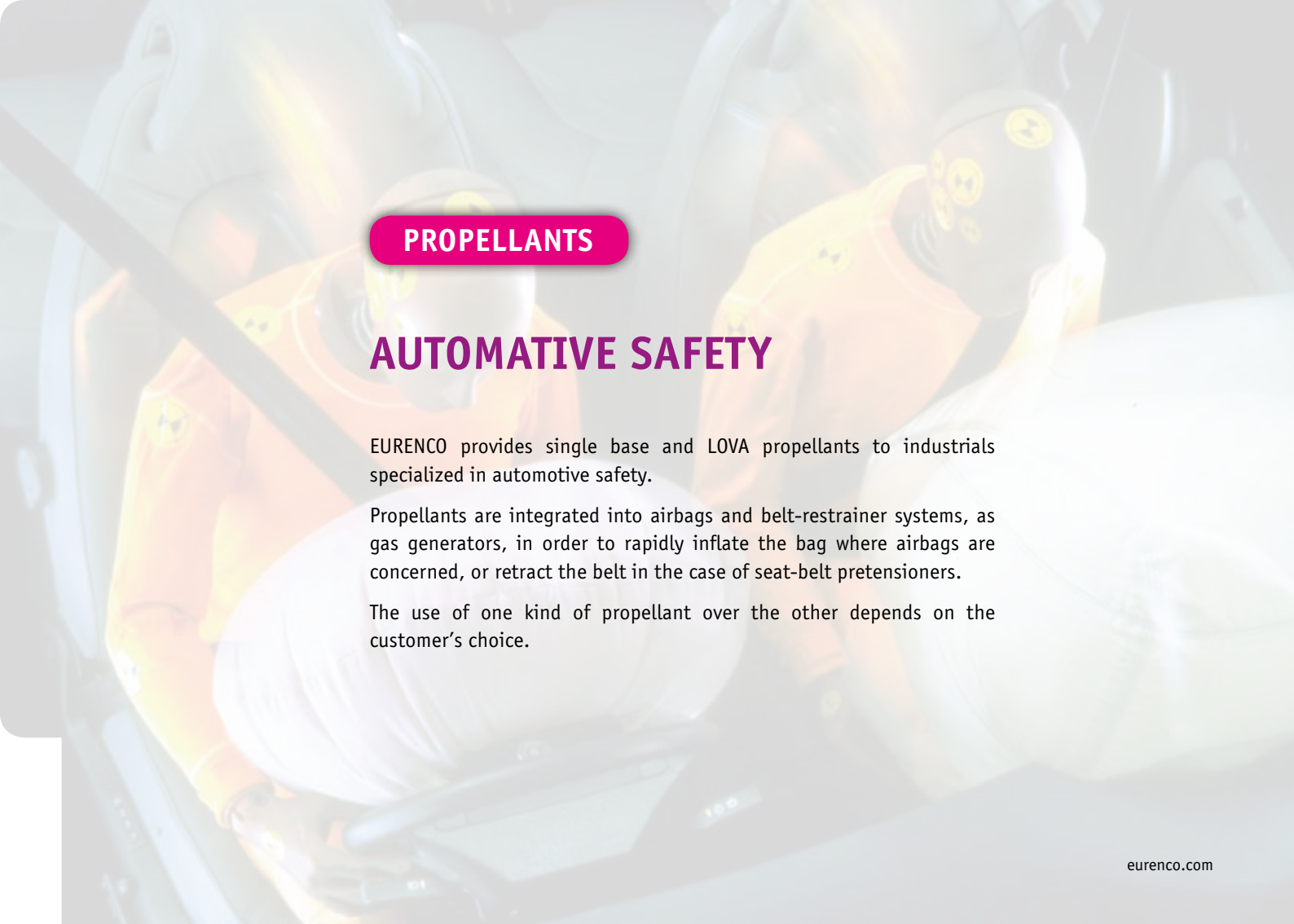
UN approved

Identification and traceability according to EU Directive 2008/43/EC and 2012/4/EU

CE-marking

PROPELLANTS

# AUTOMATIVE SAFETY



PROPELLANTS

# AUTOMATIVE SAFETY

EURENCO provides single base and LOVA propellants to industrials specialized in automotive safety.

Propellants are integrated into airbags and belt-restrainer systems, as gas generators, in order to rapidly inflate the bag where airbags are concerned, or retract the belt in the case of seat-belt pretensioners.

The use of one kind of propellant over the other depends on the customer's choice.

# PROPELLANTS FOR AUTOMOTIVE SAFETY

For airbags and safety belt restraint systems

| APPLICATION | TECHNICAL CHARACTERISTICS |
|---|---|
| AIP (auto-ignition pill) for automotive safety systems | GUDN-based composition with very exact auto ignition temperature |
| LOVA propellant for airbags | Insensitive propellant with 7 or 19 hole perforated grains<br>Propellant composition based on RDX and CAB |
| Propellant for safety belt restraint system | Single base propellant with 1 or 7 hole perforated grains |

## SPECIFICATIONS

UN No. classified

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

PROPELLANTS

# INDUSTRIAL TOOLS

PROPELLANTS

# INDUSTRIAL TOOLS

EURENCO's spherical powder is also used in cartridges for professional power tools, such as powder actuated nailers or cattle-slaughtering guns.

The high burning rate of spherical powder makes it ideal for this type of application, which requires the delivery of high energy with a small propellant volume.

# PROPELLANTS FOR INDUSTRIAL TOOLS

For power tools and cattle slaughter

## SPECIFICATIONS

UN No. classified

Identification and Traceability according to European Directive 2008/43/EC and 2012/4/EU

## APPLICATION

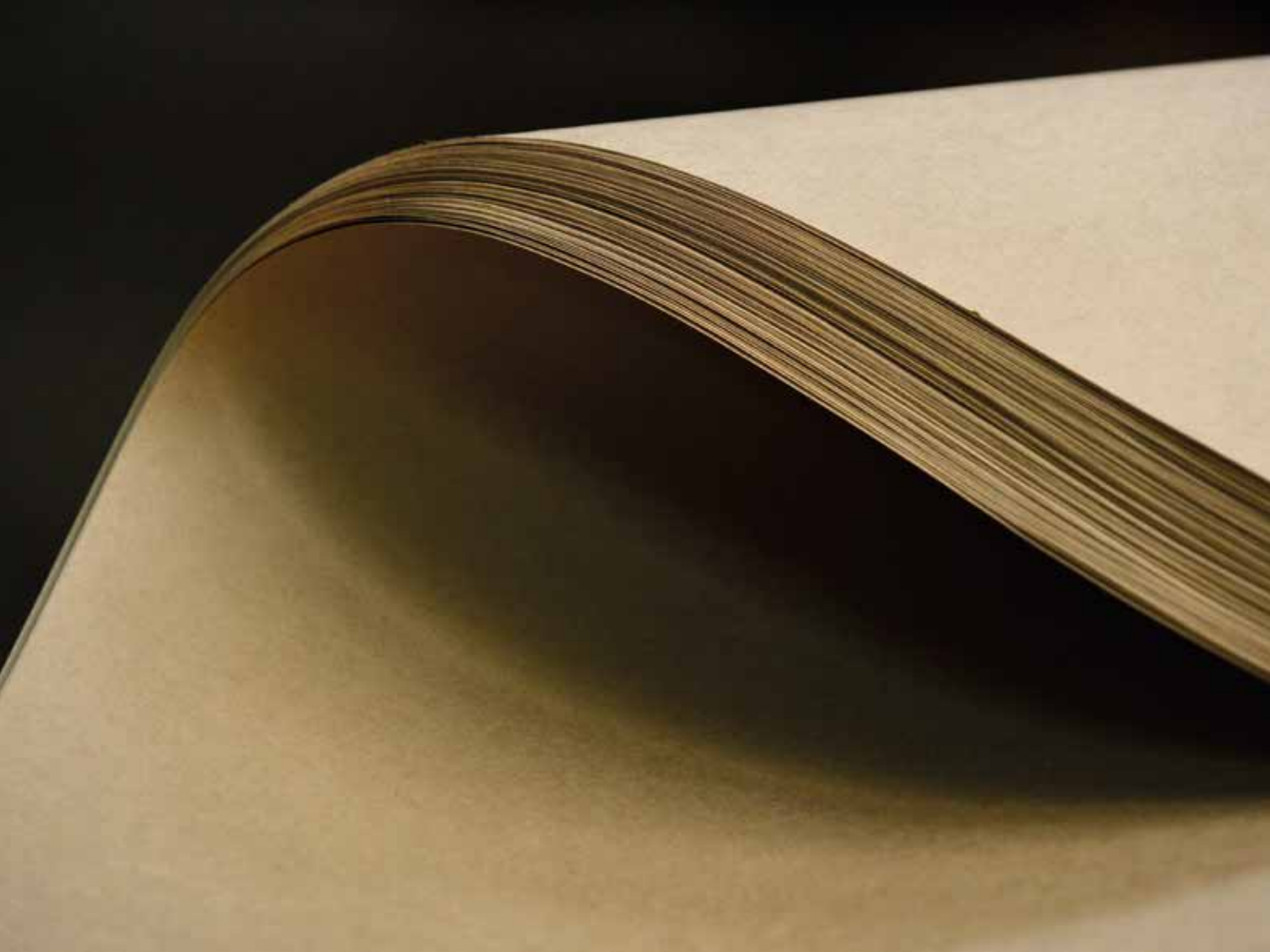
Powder loaded in high performance cartridges to be used in power tools for concrete and steel

The most common used propellant for cattle-slaughtering guns

## TECHNICAL CHARACTERISTICS

High energy and low residue propellant

Spherical powders with up to 40% nitroglycerin




COMBUSTIBLE ITEMS

# COMBUSTIBLE ITEMS

EURENCO manufactures and provides a complete range of combustible items for various applications:

- **Modular Artillery Charge System (MACS)** for artillery ammunition;
- **Combustible Cartridge Cases (CCC's)** for tank and artillery munitions;
- **Nitrofilm** for mortar horseshoe containers and automotive safety;
- **Base Bleed grains** for extended range artillery ammunition;

EURENCO is also equipped with up-to-date production capacities, among which a new automated workshop for the manufacturing of artillery modular charges.

**PRODUCTION PLANTS**

Bergerac (France)

**COMMERCIAL OFFICE**

Paris (France)
Washington DC (USA)

## COMBUSTIBLE ITEMS

# DEFENSE & SECURITY

## COMBUSTIBLE ITEMS

# DEFENSE & SECURITY

EURENCO develops a large range of combustible items specifically for Defense & Security applications.

Together with NEXTER Munitions, EURENCO developed, industrialized and qualified modular charges for 155 mm L39 to L52 artillery guns, such as the CAESAR self-propelled howitzer (155 mm L52). EURENCO is equipped with a fully automated and continuous workshop dedicated to the manufacturing of artillery modular charges.

EURENCO also provides combustible cases for 120 mm tank ammunition, as well as Nitrofilm for mortar horseshoe containers and base bleed grains for extended range ammunition.

# MACS: BOTTOM CHARGES

Linkable Bottom Charge Module (BCM): for zones 1 and 2

## SPECIFICATIONS

Munitions 155 mm Artillery
NATO 39 to 52 Cal.

## APPLICATION

Provide a complete zoning solution for 155 mm artillery applications:

- Extended range
- Improved logistics
- Higher rates of fire

## TECHNICAL CHARACTERISTICS

- Single base propellant for BCM
- Low vulnerability: MURAT* label without packaging
- Fully combustible design
- Easy and quick handling
- Different assembling modes:
  linkable or unlinkable in line with needs

# MACS: TOP CHARGES

Linkable Top Charge Module (TCM): for zones 3 to 6

## SPECIFICATIONS

Munitions 155 mm Artillery
NATO 39 to 52 Cal.

## APPLICATION

Provide a complete zoning solution for 155 mm artillery applications:

- Extended range
- Improved logistics
- Higher rates of fire

Uniflex Modular Charge Systems

## TECHNICAL CHARACTERISTICS

- Multi base propellant for TCM
- Low vulnerability: MURAT* label without packaging
- Fully combustible design
- Easy and quick handling
- Different assembling modes:
  linkable or unlinkable in line with needs

# COMBUSTIBLE CARTRIDGE CASES

Compatible with automatic loading

## SPECIFICATIONS

Munitions 105 mm and 120 mm Tank

## APPLICATION

Provide a number of advantages for 120 mm tank applications:

- Protection of the propellant charge
- Reduction in barrel wear
- Additional energy to the charge
- Increased firing rate

## TECHNICAL CHARACTERISTICS

- Increased muzzle velocity: + 5%
- Vulnerability levels to Bullet Impact with single base propellant: Type III to Type V
- Vulnerability levels to Fire with single base propellant: Type III to Type V
- Self ignition temperature: 180 °C to 240 °C

# NITROFILM

Innovative film made up of nitrocellulose

## SPECIFICATIONS

Munitions 51 mm, 60 mm, 81 mm, 120 mm Mortar

## APPLICATION

Can be used as horseshoe containers for mortar ammunition or as pyrotechnical devices for specific applications. Provides many advantages compared with conventional Celluloid:

- Enhanced flexibility, transparency, thermoplasticity, combustibility and inflammability
- Excellent mechanical properties and chemical stability
- Solvent residue < 2%
- Resistant to water and severe weather conditions

## TECHNICAL CHARACTERISTICS

- Transparent or colored
- Can be reinforced with nylon (Cellunyl®)
- Available in rolls or sheets of different sizes and thickness (0,10 mm to 0,30 mm)
- Specific shapes on request (containers, disks, increments, pyrotechnical igniters)

# BASE BLEED

For extended range artillery ammunition

## SPECIFICATIONS

STANAG 4170 for composition

## APPLICATION

Enhances projectile range up to 30% without reduction in accuracy

Adaptable to all types of shells and calibers

## TECHNICAL CHARACTERISTICS

- Excellent mechanical properties at all temperatures
- Low sensitivity to relative humidity
- Burning rate easily tunable
- Complex shape achievable through thermoplastic technology

COMBUSTIBLE ITEMS

# CIVIL APPLICATIONS

COMBUSTIBLE ITEMS

# CIVIL APPLICATIONS

EURENCO's Nitrofilm can be substituted to Celluloid for a variety of applications, including in the civil sector.

Today, it is essentially found in automotive safety, as thermal fuse or container, but it could also be used tomorrow to meet different needs in other industrial activities.

# NITROFILM

Celluloid product substitution for any pyrotechnical application

## SPECIFICATIONS

According to EURENCO spec.

## APPLICATION

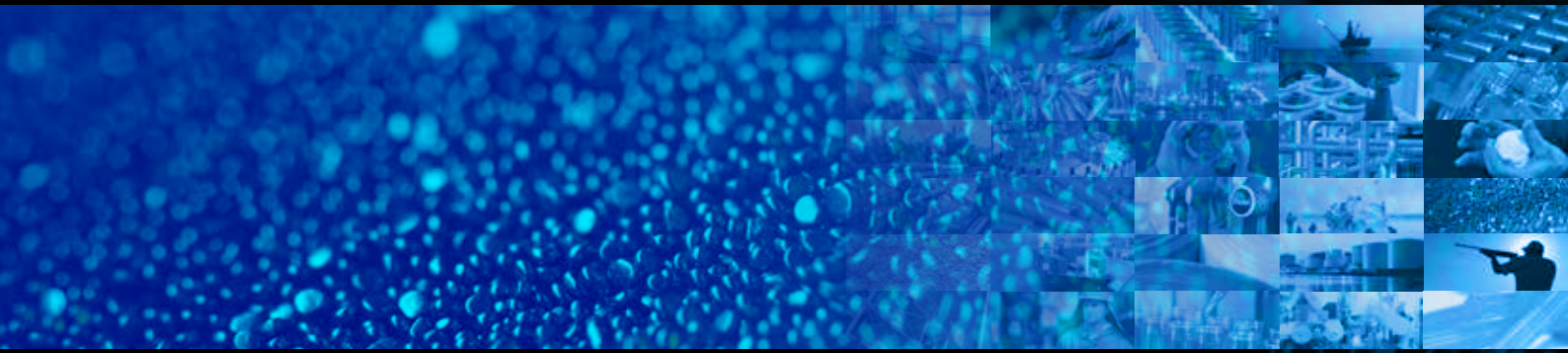
Thermal fuse or container for automotive safety
Continuous transformation in serial conditions possible
Safe, stable and easy to use

## TECHNICAL CHARACTERISTICS

| | |
|---|---|
| Thickness | 0,1 mm to 0,3 mm |
| Width | 560 mm max |
| Length | 400 linear meters max |
| Transparent of colored | |
| Available in sheets or rolls of different sizes | |




# UNMATCHED EXPERTISE, PROVEN SOLUTION.



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