
NOBEL
EXPLOSIVES


NOBEL
EXPLOSIVES
FUEL OIL
NOBEL

COMPANY

HISTORY

- 1993: Nobel Explosives was established in Lalahan, Ankara, as one of the world's newest and most modern emulsion explosive facilities, employing US technology.
- 1996: A joint venture company (JVC) was formed in partnership with ICI, marking the beginning of a strong collaboration and partnership in the sector.
- 2000: Partnership with Orica began following the transfer of ICI shares to Orica International, enabling integration into a broader international network.
- 2023: With the acquisition of shares of Orica International, Nobel Explosives continued its operations with 100% domestic capital, further strengthening its position as a rooted and local establishment in Türkiye.

FACTORY AND PRODUCTION

Our production facility, spanning over 1,000 acres of land, operates in five separate units for the production of emulsion explosives, electric and non-electric detonators, emulsifiers, and ANFO.

Located within a modern facility covering over 10,000 square meters of enclosed space, we utilize state-of-the-art production lines and storage areas to manufacture high-quality products for our partners.

HIGH SAFETY, HEALTH, AND ENVIRONMENT (SHE) SECURITY

We maintain the highest standards of occupational health, safety, and environmental (SHE) practices. Our facility operates in compliance with international quality management systems, emphasizing continuous improvement and innovation.

RESPECT FOR THE PAST, INSPIRATION FOR THE FUTURE

With pride and responsibility in playing a pioneering role in Türkiye's civil explosives sector, we continue to progress towards the future with a forward-looking approach.

Through continuous innovation and R&D efforts, we enrich our performance culture and enhance our dynamic product portfolio. Centering our approach around excellence, we always aim for better outcomes for our country, partners, and employees.









PRODUCTS AND SERVICES

SECTORS

- Quarrying
- Surface and Underground Metal Mines
- Surface and Underground Coal Mines
- Road, Bridge, and Tunnel Construction
- Excavation for Foundations
- Dam and Reservoir Excavations

BLASTING ENGINEERING AND ANALYSIS SERVICES

- Cost Analysis
- Drilling and Blasting Design
- Underground - Surface Drilling and Blasting
- Bulk Emulsion Hole Loading
- ANFO Hole Loading
- Particle Size Analysis
- Bulk Analysis
- Vibration and Air Blast Analysis
- Energy Distribution Analysis
- 3-Dimensional Profiling
- Free Surface Analysis

EXPLOSIVES PRODUCTION, SALES AND DISTRIBUTION SERVICES

- Cap-sensitive explosive products
- Emulsion Explosives and ANFO sensitive to priming
- Non-electric initiation systems
- Electric detonators
- Safety fuses and detonating cords

PROJECT DEVELOPMENT AND TECHNOLOGY SERVICES

- Design, assembly, and commissioning of commercial explosive manufacturing plants
- Assembly and commissioning of surface emulsion charging units (MMU Truck)
- Assembly and commissioning of surface ANFO charging units (ANFO Truck)
- Assembly and commissioning of underground charging machines

WebGen™
Wireless Electronic Blasting Systems

WORLD'S FIRST WIRELESS INITIATION SYSTEM

WebGen™ provides safer, more efficient, and environmentally friendly solutions for blasting operations.

- Enables remote and secure initiation of blasts, enhancing operational flexibility and safety.
- Wireless technology allows optimization of blast timing, enabling more efficient material fragmentation.
- Reduces environmental impact of blasts with low noise and vibration levels.

* This product is not yet used in Turkey due to current regulations. It has been showcased for international supply and operations.

i-kon™ III
Electronic Blasting System

ACHIEVE MAXIMUM BLASTING EFFICIENCY

Experience effective results in the most challenging mining and environmental conditions with the flexibility and power of i-kon™ III, the most advanced Electronic Blasting System on the market.

- Maximum blasting efficiency
  Increase loader efficiency by 18% compared to non-electric blasts.
- Reliable High Precision
  World's most accurate electronic initiation system with 0.005 milliseconds time variance.
- High Dynamic Shock Resistance
  High dynamic shock resistance reduces the risk of blasting errors in challenging ground conditions.

uni tronic™ 600

Electronic Blasting System

POWERFUL PERFORMANCE
ADVANCED CONTROL

- uni-tronic™ 600 electronic detonators
- Bluetooth-enabled Blast Box 310 / Wireless
- Remote firing capability with 310R
- Scanners 110 / 120 / 125
- Scanner 200 for on-bench, full functional testing of uni-tronic™ 600 detonators
- Test Box and new Tester for secure on-bench communication and testing of uni-tronic™ 600 detonators
- Duplex connection cable

eDev™ II

Electronic Tunnel Blasting System

DISCOVER THE POWER OF DATA
EXPERIENCE THE FUTURE NOW

- SHOTPlus® Tunnel blasting design software
- eDev™ II electronic detonators
- Blast Box 610 and 610C
- Scanner 120 or Scanner 125
- New Scanner 260 for on-surface, natural and secure, full-function testing of eDev™ II detonators
- eDev™ II Test Box or Tester for natural and secure surface testing of all detonators
- Duplex connection cable

CAP-SENSITIVE EMULSION EXPLOSIVES

FORCE SUPER P1
FORCE MAX365
FORCE MAX
FORCE CUTMIX
FORCE SISMIK

FORCE SUPER P1

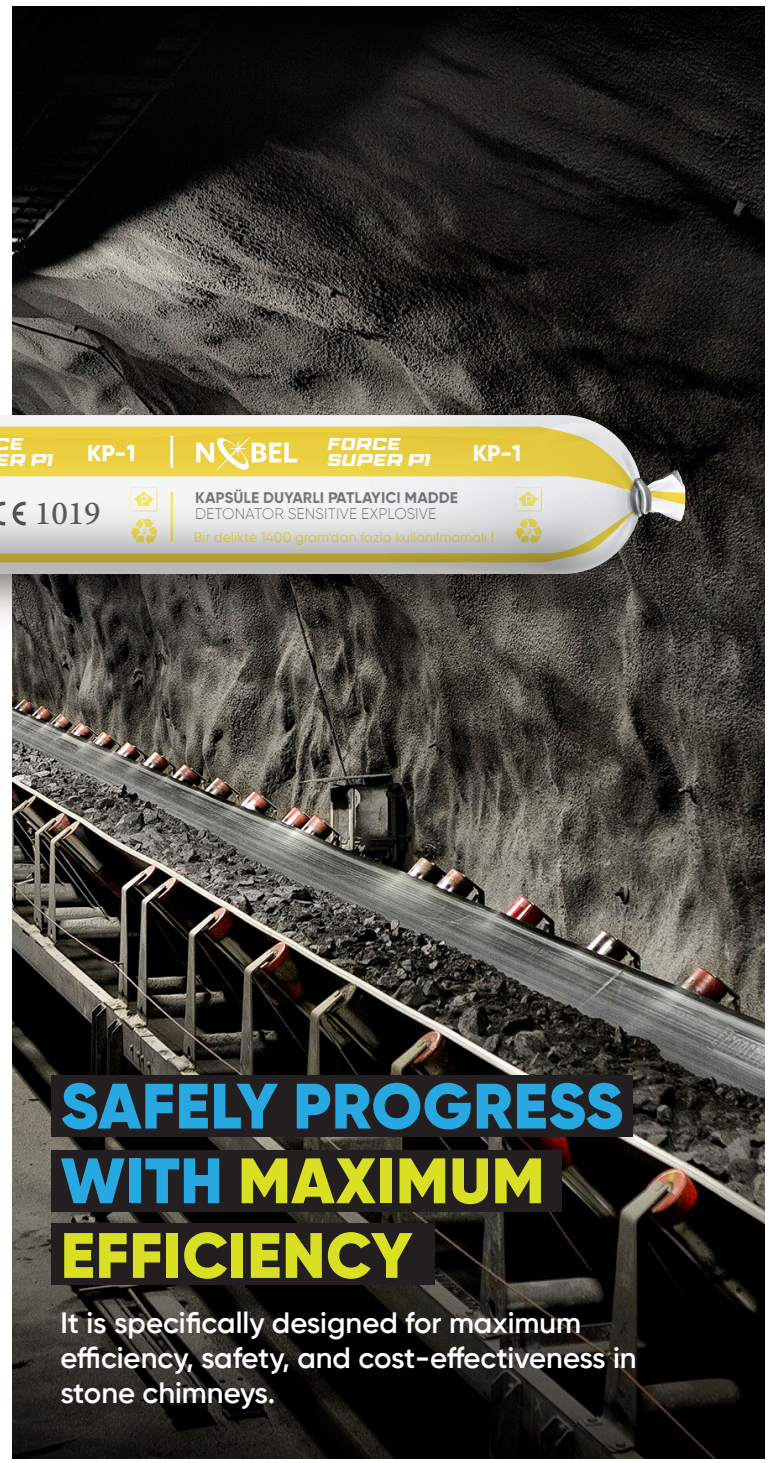
METHANE SAFE EMULSION EXPLOSIVE

It is a cap-sensitive emulsion explosive designed for underground coal mines, ensuring safety in methane-rich environments.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	5400 m/s
Detonation Pressure	8,05 Gpa
Detonation Temperature (K)	2538°K
Detonation Energy	3130 Kj / Kg
Oxygen Balance	% -1,04
Density	1,14 g/cm³
Gas Volume	809 Lt/Kg
Water Resistance	Excellent
Relative Weight Strength (ANFO)	% 88
Relative Bulk Strength (ANFO)	% 125

STANDARD SIZES	CARTRIDGE WEIGHTS
27 x 225	149 gr
32 x 200	188 gr
34 x 220	250 gr

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.



HIGH POWER

Force Super P1 is manufactured with patented emulsion technology. It has the most superior shockwave properties among methane-safe emulsion explosives worldwide.

EFFECTIVE PERFORMANCE

Force Super P1 provides effective rock breaking and superior displacement performance with high detonation pressure and excellent resistance to water. Its superior gas properties allow entry immediately after blasting instead of waiting, preventing potential time losses.

HIGH OPERATIONAL SAFETY

Force Super P1 has high-performance characteristics as well as high occupational safety features. It is extremely resistant to friction, impact, and other mechanical effects that could cause explosions. It does not cause headaches. After the shelf life expires, its sensitivities diminish, and it decomposes into completely safe substances without posing any danger.

APPLICATION

Force Super P1 can be safely used in gassy underground applications (stone headings, shaft sinking and raise boring) not closer than five meters to pre-mined galleries and having a coal seam thickness less than 30 cm. All charging process must be done according to regulatory restrictions. It is suitable to charge up to 1400 grams per hole, with a maximum of 800 grams in holes shorter than 180 cm and a minimum stemming of 60 cm and a weight of 50 cm. It is classified as P1 (Permissible Explosive) in firedamp explosives.

INITIATION

Force Super P1 is detonated with a standard copper capsule of size 8*. It should not be fired at temperatures below -15°C!

TEST CERTIFICATE

HSE (M) Health & Safety Laboratory
Approval Number: 401/3 United Kingdom

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Class 1.1D, U.N. No: 0241
Explosive Substance Type E

PACKING

In internally supported cardboard boxes of net 20 kg each.

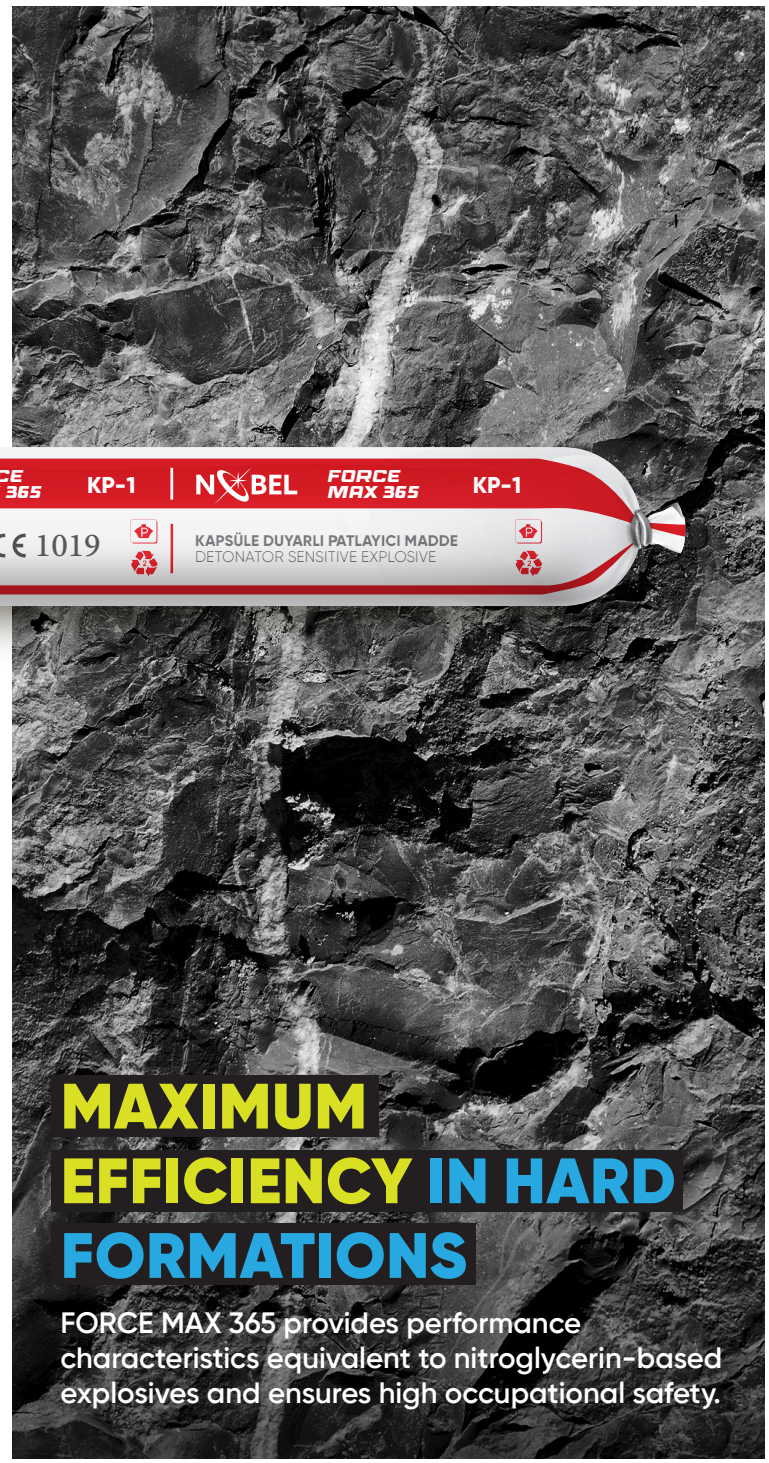
FORCE MAX 365

CAP-SENSITIVE EMULSION EXPLOSIVE

It is the most powerful emulsion explosive known in the world, designed for tunneling and underground and surface mining operations.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	6140 m/s
Detonation Pressure	11,29 Gpa
Detonation Temperature (K)	3106°K
Detonation Energy	4370 Kj / Kg
Oxygen Balance	% -1,60
Density	1,20 g/cm³
Gas Volume	873 Lt/Kg
Water Resistance	Excellent
Relative Weight Strength (ANFO)	% 129
Relative Bulk Strength (ANFO)	% 193

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.



HIGH POWER

In the early 2000s, the new formulation FORCE MAX 365, which was adopted by European Union countries and the United States, has the highest shock and heaving properties among existing emulsion explosives.

EFFECTIVE PERFORMANCE

FORCE MAX 365, especially excels in underground blasting operations compared to other emulsion-based explosives due to its enhanced effective energy.

HIGH OPERATIONAL SAFETY

FORCE MAX 365, outstandingly combines superior performance with high safety features. It is highly resistant to friction, impact, and other mechanical effects, and exhibits excellent resistance to water.

APPLICATION

FORCE MAX 365 can be used as a high-density column explosive for both tunneling and underground blasting operations (and is also suitable for cartridge loading and initiation applications).

INITIATION

FORCE MAX 365 cartridges are sensitive to standard No. 8* detonators. When using detonating cord, ensure tight contact with the cartridge (at least 10 g/m) is maintained. It should not be fired at temperatures below -15°C.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Class 1.1D, U.N. No: 0241
Explosive Substance Type E

PACKING

In internally supported cardboard boxes of net 20 kg each.

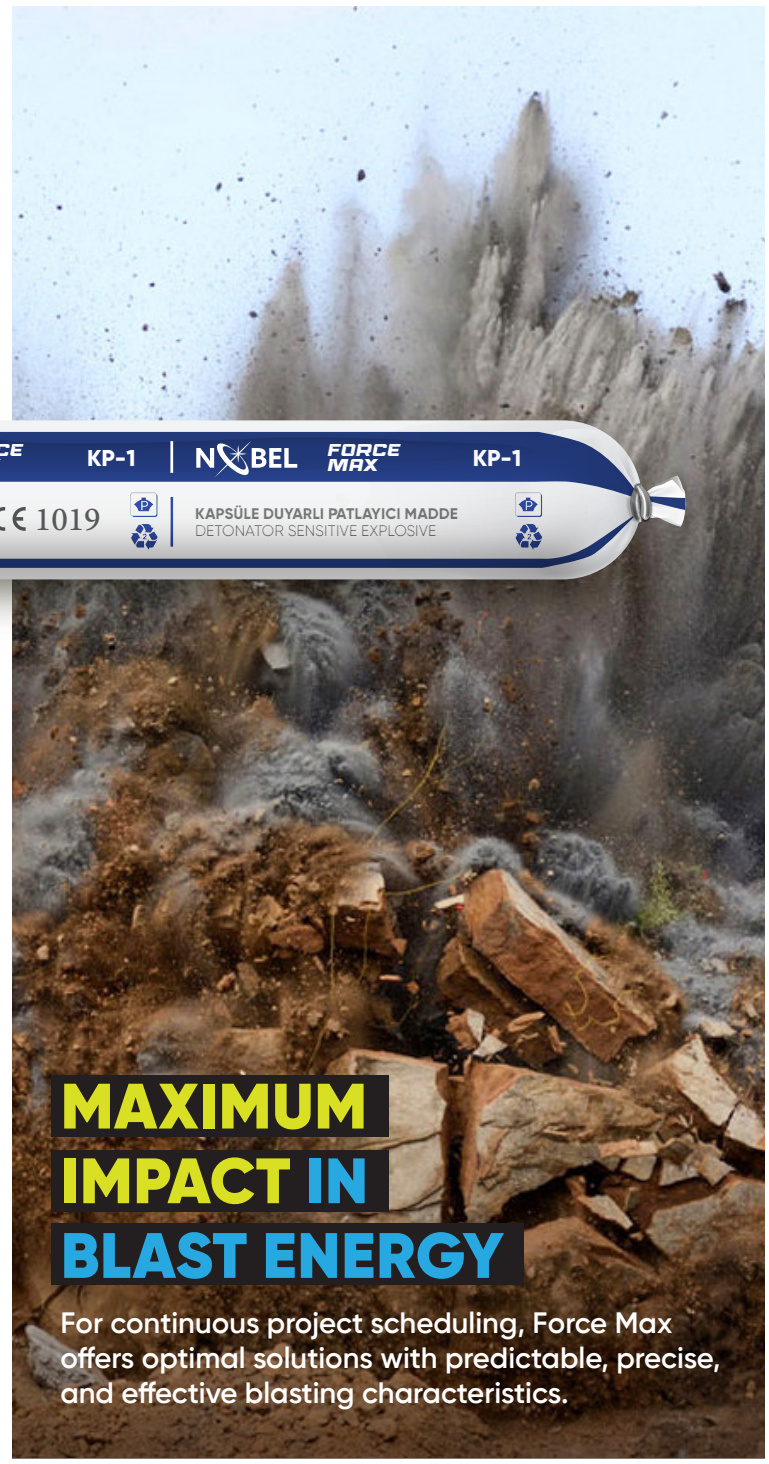
STANDARD SIZES	CARTRIDGE WEIGHTS
27 x 225 mm	160 gr
30 x 225 mm	200 gr
32 x 200 mm	200 gr
34 x 225 mm	250 gr
34 x 400 mm	400 gr
36 x 225 mm	250 gr
36 x 400 mm	500 gr
38 x 400 mm	500 gr
50 x 225 mm	500 gr

FORCE MAX

CAP-SENSITIVE EMULSION EXPLOSIVE

It is an explosive designed for the construction sector, tunnels, and mining operations, optimized for maximum efficiency.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	6330 m/s
Detonation Pressure	12,03 Gpa
Detonation Temperature (K)	2630°K
Detonation Energy	3580 Kj / Kg
Oxygen Balance	% -1,70
Density	1,20 g/cm³
Gas Volume	941 Lt/Kg
Water Resistance	Excellent
Relative Weight Strength (ANFO)	% 118
Relative Bulk Strength (ANFO)	% 177



The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.

HIGH POWER

FORCE MAX, which was introduced by European Union countries and the USA in the early 2000s, with its new formulation, has the highest shock and displacement properties among existing emulsion explosives.

EFFECTIVE PERFORMANCE

FORCE MAX, especially in underground blasting, offers the highest performance compared to other emulsion-based explosives, thanks to its increased effective energy.

HIGH OPERATIONAL SAFETY

FORCE MAX, outstandingly combines superior performance with high safety features. It is highly resistant to friction, impact, and other mechanical effects, and exhibits excellent resistance to water.

APPLICATION

FORCE MAX can be used as a high-density column explosive for both tunneling and underground blasting operations (it is also suitable for cartridge loading and initiation applications).

INITIATION

FORCE MAX cartridges are sensitive to standard No. 8* detonators. When using detonating cord, ensure tight contact with the cartridge (at least 10 g/m) is maintained. It should not be fired at temperatures below -15°C.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Class 1.1D, U.N. No: 0241
Explosive Substance Type E

PACKING

In internally supported cardboard boxes of net 20 kg each.

STANDARD SIZES	CARTRIDGE WEIGHTS
50 x 225 mm	500 gr
50 x 450 mm	1000 gr
75 x 200 mm	1000 gr
75 x 400 mm	2000 gr
90 x 150 mm	1000 gr
90 x 290 mm	2000 gr

FORCE CUTMIX

CAP-SENSITIVE EMULSION EXPLOSIVE

Pre-splitting - Smooth blasting applications

The emulsion explosive is designed for pre-splitting and smooth blasting applications in tunneling and underground mining operations. It achieves smooth and less fractured tunnel profiles due to its high detonation velocity and homogeneous distribution along the borehole. It is water-resistant and can be safely used in wet boreholes.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	5490 m/s
Detonation Pressure	8,08 Gpa
Detonation Temperature (K)	2571°K
Detonation Energy	3240 Kj / Kg
Oxygen Balance	% -1,93
Density	1,08 g/cm³
Gas Volume	894 Lt/Kg
Water Resistance	Excellent
Relative Weight Strength (ANFO)	% 96
Relative Bulk Strength (ANFO)	% 130

STANDARD SIZES	CARTRIDGE WEIGHTS
19 x 735 mm	250 gr
24 x 500 mm	250 gr

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.

HIGH POWER

FORCE CUTMIX is a capsule-sensitive emulsion-based explosive formulation that European Union countries and the United States began using in the early 2000s. It features plastic cartridges measuring 19x735 mm and 24x500 with connection mechanisms and centering fins at both ends, allowing them to be easily connected to each other and positioned appropriately within the borehole.

EFFECTIVE PERFORMANCE

Ideal for use in wet and humid conditions, this explosive features a water-based formulation that does not contain hazardous chemicals like nitroglycerin or TNT. Additionally, its post-blast gas characteristics make it suitable for underground blasting.

HIGH OPERATIONAL SAFETY

The smoke characteristic following detonation provides a safe working environment for underground and surface tunneling operations. It is much safer against impact, friction, and other mechanical effects compared to nitroglycerin-based explosives.

APPLICATION

FORCE CUTMIX can be used as a high-density column explosive for both tunneling and underground blasting operations (it is also suitable for cartridge loading and initiation applications).

INITIATION

FORCE CUTMIX cartridges are sensitive to standard No. 8 capsules and should not be fired below -15°C.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

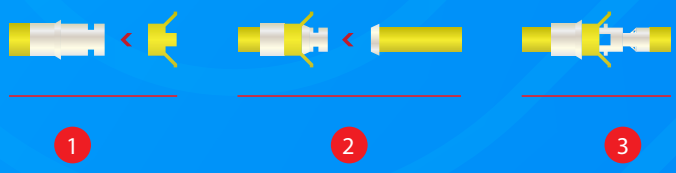
Class 1.1D, U.N. No: 0241
Explosive Substance Type E

PACKING

In internally supported cardboard boxes of net 20 kg each.

LOADING

Centering fins prevent displacement during underground blasting.
FORCE CUTMIX tubes should be connected together for loading.



FORCE SİSMİK

CAP-SENSITIVE EMULSION EXPLOSIVE

FORCE SİSMİK is a capsule-sensitive emulsion explosive used in seismic surveys. It is specially designed for use in petroleum, natural gas, geothermal resources, and ground survey operations.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	5980 m/s
Detonation Pressure	10,47 Gpa
Detonation Temperature (K)	2605°K
Detonation Energy	3450 Kj / Kg
Oxygen Balance	% -1,51
Density	1,18 g/cm³
Gas Volume	894 Lt/Kg
Water Resistance	Excellent
Relative Weight Strength (ANFO)	% 108
Relative Bulk Strength (ANFO)	% 159

STANDARD SIZES	CARTRIDGE WEIGHTS
50 x 450 mm	1000 gr

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.

HIGH POWER

FORCE SİSMİK (SEISMIC) is a capsule-sensitive emulsion explosive with high power and high detonation velocity, providing excellent point signal strength in the surrounding rock, used by European Union countries and the United States since the early 2000s.

EFFECTIVE PERFORMANCE

FORCE SİSMİK (SEISMIC) provides a compact explosive charge with high detonation velocity. These characteristics help deliver a clean and clear signal into the surrounding rocks. Force Sismik also exhibits excellent water resistance even in dynamic water environments. The explosive density is designed to ensure that the cartridge sinks in water.

HIGH OPERATIONAL SAFETY

FORCE SİSMİK (SEISMIC), high performance along with high occupational safety features. It is much safer against friction and impact compared to seismic dynamite because it does not contain substances like Nitroglycerin or Nitroglycol.

APPLICATION

FORCE SİSMİK (SEISMIC) can be used as a high-density column explosive for both tunneling and underground blasting operations (it is also suitable for cartridge loading and initiation applications).

INITIATION

FORCE SİSMİK (SEISMIC) cartridges are sensitive to standard No. 8 capsules and should not be fired below -15°C.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

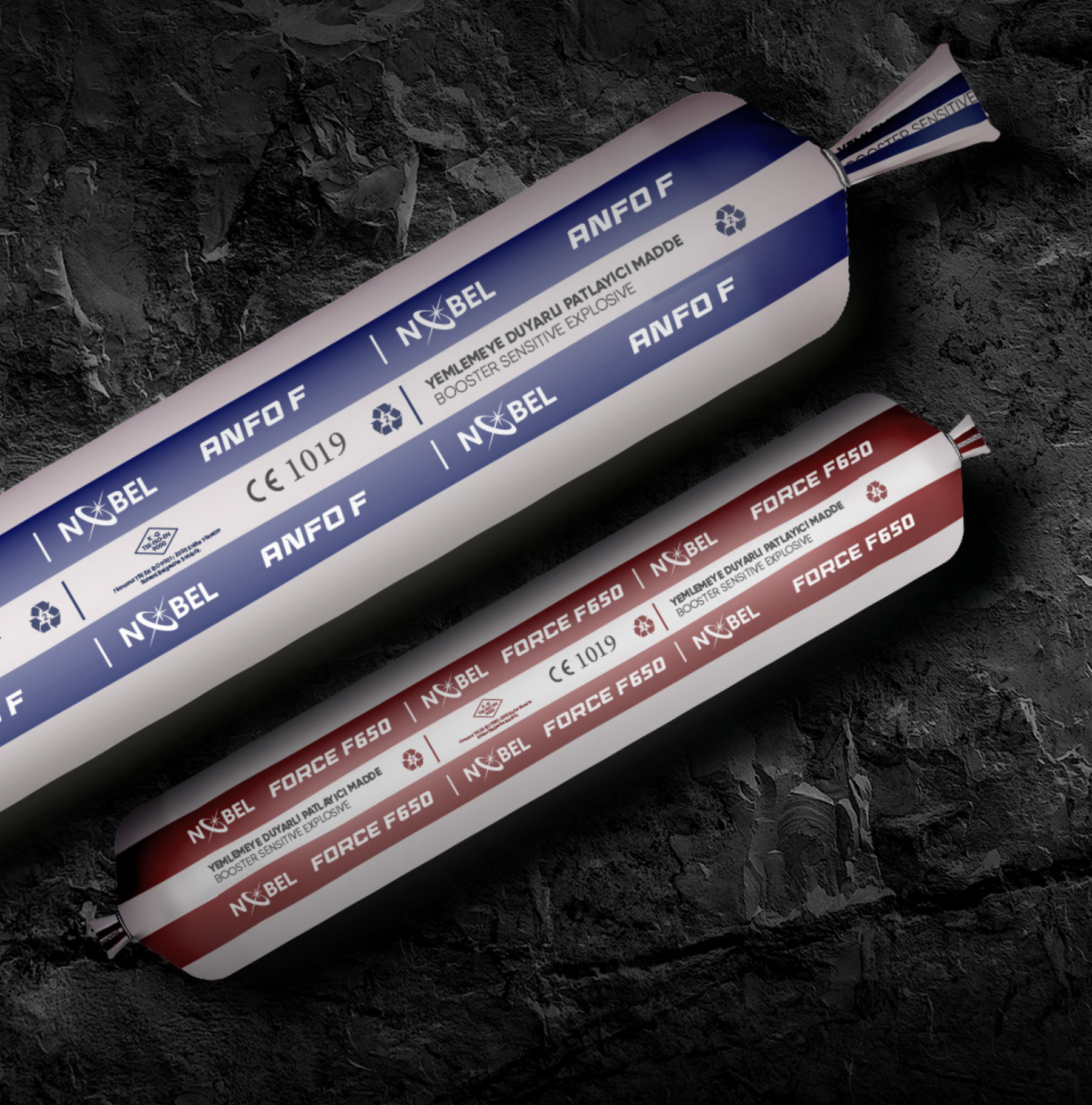
Class 1.1D, U.N. No: 0241
Explosive Substance Type E

PACKING

In internally supported cardboard boxes of net 20 kg each.

BOOSTER SENSITIVE EMULSION EXPLOSIVES

FORCE S600
FORCE F650
FORCE F750
FORCE F1000
FORCE LD
FORCE ANFO F


NOBEL
ANFO F
YEMLEMEYE DUYARLI PATLAYICI MADDE
BOOSTER SENSITIVE EXPLOSIVE
CE 1019
FORCE F650

FORCE

S600 – F650 – F750 – F1000 – FORCE LD – ANFO F

BULK-SENSITIVE EMULSION EXPLOSIVES

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS						
	FORCE S600	FORCE F650	FORCE F750	FORCE F1000	FORCE LD	ANFO F
Detonation Velocity (VoD)	6550 m/s	6440 m/s	6360 m/s	6090 m/s	3570 m/s	5180 m/s
Detonation Pressure	13,15 Gpa	12,65 Gpa	12,29 Gpa	10,95 Gpa	1,92 Gpa	6,21 Gpa
Detonation Temperature (K)	2245°K	2190°K	2112°K	2032°K	2855°K	2853°K
Detonation Energy	3050 Kj / Kg	2910 Kj / Kg	2750 Kj / Kg	2530 Kj / Kg	3380 Kj / Kg	3590 Kj / Kg
Oxygen Balance	% -3,58	% -2,64	% -2,84	% -3,33	% -6,56	% -0,91
Density	1,24 g/ml	1,25 g/ml	1,25 g/ml	1,23 g/ml	0,51 g/ml	0,90 g/ml
Gas Volume	990 Lt/Kg	966 Lt/Kg	962 Lt/Kg	943 Lt/Kg	1008 Lt/Kg	981 Lt/Kg
Water Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Relative Weight Strength (ANFO)	% 110	% 104	% 99	% 89	% 70	% 102
Relative Bulk Strength (ANFO)	% 170	% 162	% 155	% 137	% 45	% 115
Recommended Use Area	Soft Formation	Medium - Hard Formation	Hard Formation	Very Hard Formation	Very Soft Formation (Mudstone)	Underground Mining Roof Holes

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.

FORCE S600

Designed for very soft and soft formations, this explosive is optimized for use in wet holes to maximize heave and breakage force. It is a high-performance explosive fired with cap-sensitive detonators.

FORCE F650

Designed for medium-hard rocks, this explosive is used in wet holes and features both heaving and breaking properties. It is fired with cap-sensitive detonators.

FORCE F750

Designed for hard rocks, this explosive is used in wet holes and features both heaving and breaking properties. It is fired with cap-sensitive detonators.

FORCE F1000

Designed for very hard rocks, this explosive is used in wet holes and features both heaving and breaking properties. It is a high-performance explosive fired with cap-sensitive detonators.

FORCE LD

Designed for very soft (marl) formations, this explosive is used in dry holes and features both heaving and breaking properties. It is fired with cap-sensitive detonators.

ANFO-F

Underground mining; designed for dry roof holes; featuring heaving and breaking properties, detonated with cap-sensitive explosives.

• We have the capability to produce suitable emulsion explosives for different rock formations and specific requirements.

The above products, developed within our company, are currently widely used in European Union countries and the United States, offering optimal performance in the applied formations.

EFFECTIVE PERFORMANCE

FORCE S600 - F650 - F750 - F1000 are water-resistant emulsion explosives. FORCE LD and ANFO-F are emulsion explosives used in dry boreholes.

FORCE S600 - F650 F750 - F1000	
STANDARD SIZES	**CARTRIDGE WEIGHTS**
65 x 500 mm	2 Kg.
75 x 450 mm	2,5 Kg.
85 x 500 mm	4 Kg.
90 x 500 mm	4 Kg.
125 x 650 mm	10 Kg.
140 x 520 mm	10 Kg.
FORCE LD - ANFO - F	
STANDARD SIZES	**WEIGHTS**
Bulk	25 kg PP-PE bags
BULK EMULSION	
400 KG IN IBC UNITS	

HIGH OPERATIONAL SAFETY

FORCE S600 - F650 - F750 - F1000 and FORCE LD, as well as ANFO-F, are much less sensitive and safer compared to explosives containing nitroglycerin or nitroglycol against friction and impact. Additionally, they do not cause headaches or other health issues during storage or use.

INITIATION

FORCE S600 - F650 - F750 - F1000, FORCE LD ve ANFO-F, cap-sensitive explosives (such as FORCE MAX and FORCE MAX 365 or dynamite) are fired with. Cartridges should be cut along their sides during hole loading to ensure coverage of the borehole section with explosive material, maximizing blasting performance.

PACKING

FORCE S600 - F650 - F750 - F1000, net weight of 20 kg, packaged in internally supported cardboard boxes. FORCE LD and ANFO-F are packaged in 25 kg net weight PP and PE bags.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Class 1.1D, U.N. No. 0241
Explosive substance Type E.

FORCE ANFO

BULK-SENSITIVE EXPLOSIVE

Prill Porous Ammonium Nitrate - Fuel Oil

It is a powerful explosive used in large-scale mining and construction sectors, in dry boreholes.

THERMODYNAMIC AND TECHNICAL SPECIFICATIONS	
Detonation Velocity (VoD)	4830 m/s
Detonation Pressure	50,10 Gpa
Detonation Temperature (K)	3064°K
Detonation Energy	3850 Kj / Kg
Density	0,78 - 0,81 g/cm³
Gas Volume	968 Lt/Kg
Water Resistance	Yok

The above technical specifications are ideal values. Real detonation velocity depends on cartridge diameter and whether the explosive is confined or unconfined.

EFFECTIVE PERFORMANCE

FORCE ANFO, Prill Porous Ammonium Nitrate (Nitrogen content 34.50%, minimum diesel absorption rate 9%, prill rate above 99.50%), mixed with diesel, is an explosive used in dry boreholes.

- Does not contain Low Nitrogen Ammonium Nitrate (Fertilizer).
- Diesel is used as Fuel Oil, does not contain oil.
- It is 10-15% more powerful and efficient compared to its counterparts in the market.

HIGH OPERATIONAL SAFETY

FORCE ANFO is much less sensitive and safer against friction and impact. Additionally, it does not cause headaches or other health issues during storage or use.

INITIATION

FORCE ANFO is initiated with cap-sensitive explosives such as Powerg Max, Power Max 365, or dynamite. The most efficient initiation is achieved by using cap-sensitive explosives that are closest in diameter to the borehole. Additionally, having the length of the cap-sensitive explosive five times its diameter maximizes blasting performance.

PACKING

Packaged in 25 kg PP and PE bags.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Class 1.1D, U.N. No. 0082
Explosive Substance Type E

FORCE BULK

BULK-SENSITIVE EXPLOSIVES

In mining, tunnel construction, and the construction industry, it is a fluid emulsion explosive charged into underground and surface holes.

NON-ELECTRIC INITIATION SYSTEMS

FORCE MS
FORCE LP
FORCE HTD
FORCE TWINDET

ELECTRIC INITIATION SYSTEMS

DELAY ELECTRIC – INSTANT ELECTRIC
COPPER (CU) DETONATORS

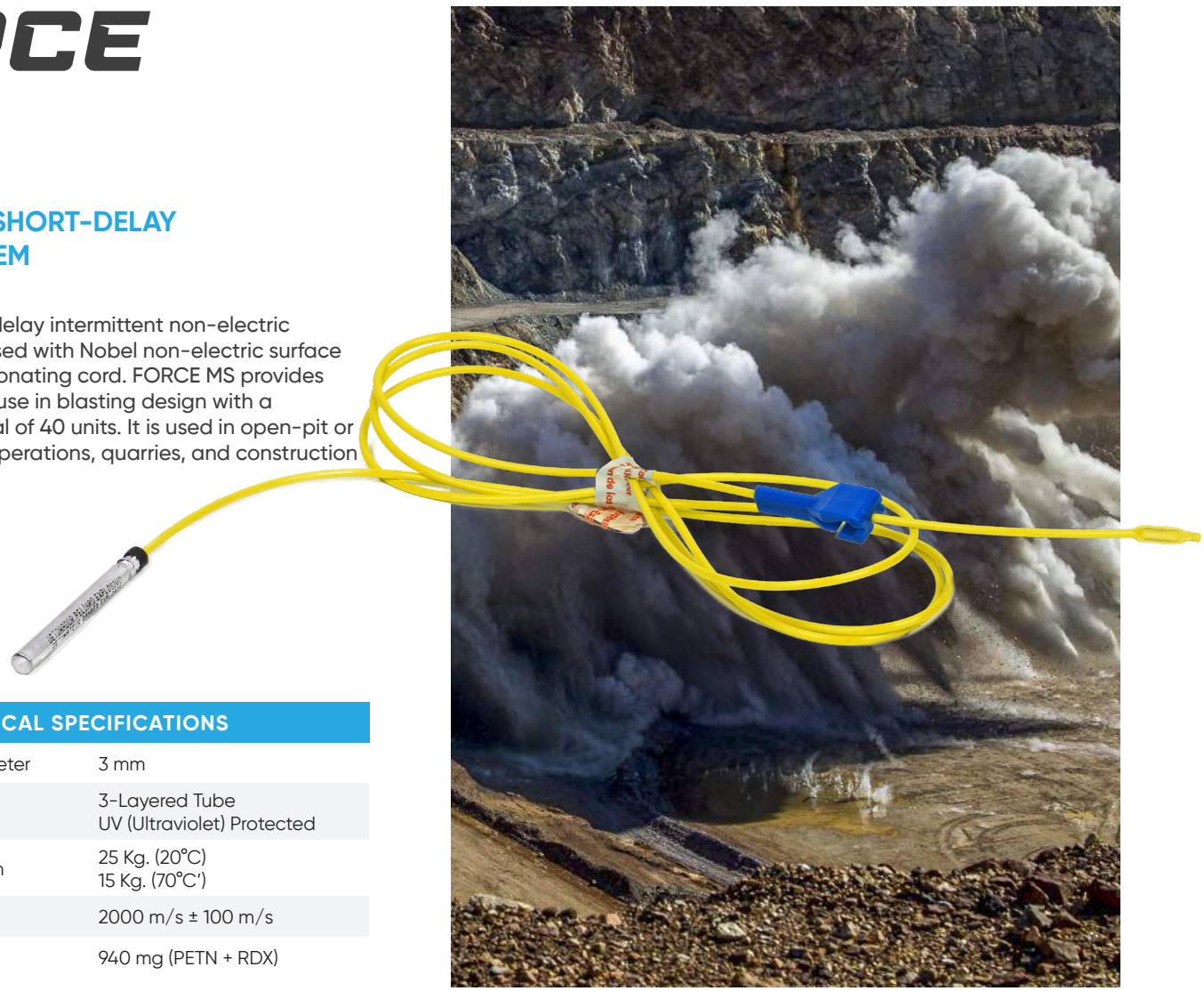
DELAY ELECTRIC – INSTANT ELECTRIC
ALUMINUM (AI) DETONATORS

SEISMIC ELECTRIC
INSTANT DETONATORS

FORCE MS

NON-ELECTRIC SHORT-DELAY INITIATION SYSTEM

FORCE MS is a short-delay intermittent non-electric capsule system. It is used with Nobel non-electric surface delay elements or detonating cord. FORCE MS provides flexibility and ease of use in blasting design with a standard delay interval of 40 units. It is used in open-pit or underground mining operations, quarries, and construction projects.



TECHNICAL SPECIFICATIONS	
Shock Tube Outer Diameter	3 mm
Shock Tube Type	3-Layered Tube UV (Ultraviolet) Protected
Nominal Tensile Strength	25 Kg. (20°C) 15 Kg. (70°C')
Shock Tube Velocity	2000 m/s ± 100 m/s
Detonator Cap	940 mg (PETN + RDX)

TECHNICAL DELAY NUMBERS AND TIME INTERVALS																											
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32	36	40
Delay Duration	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	550	600	650	700	750	800	900	1000

PACKAGING AND PRODUCT DIMENSIONS													
Length (Meter)	4	5	6	7	9	12	15	18	21	25	30	37	45
Quantity per Box	200	150	150	150	100	60	60	50	50	40	30	20	20

Other lengths can be produced upon request.

EFFECTIVE PERFORMANCE

High-strength shock tube non-electric detonator system. It is highly resistant to breakage and friction. Delay times are in the standard 40 series. Connection is fast and simple. It has a easily noticeable appearance in a bright color. Wrapped in the shape of the number 8 for ease of use

HIGH OPERATIONAL SAFETY

Initiates all detonator-sensitive explosives reliably. Does not damage the main explosive inside the borehole. Resilient to all conditions. Provides flexible and excellent blast control. Easy to connect. Quick connections increase ease of use in the field. No tangling or confusion occurs.

INITIATION

Except for stemming, it is not used to suspend other materials inside the borehole. Care must be taken not to damage the shock tube during charging and stemming. Exel MS is initiated using the following methods: Nobel Explosives product surface delay detonator 5 gr. PETN/m detonating cord.

PACKING

FORCE MS, wrapped in the shape of the number eight and packaged in antistatic PE bags within cardboard boxes.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

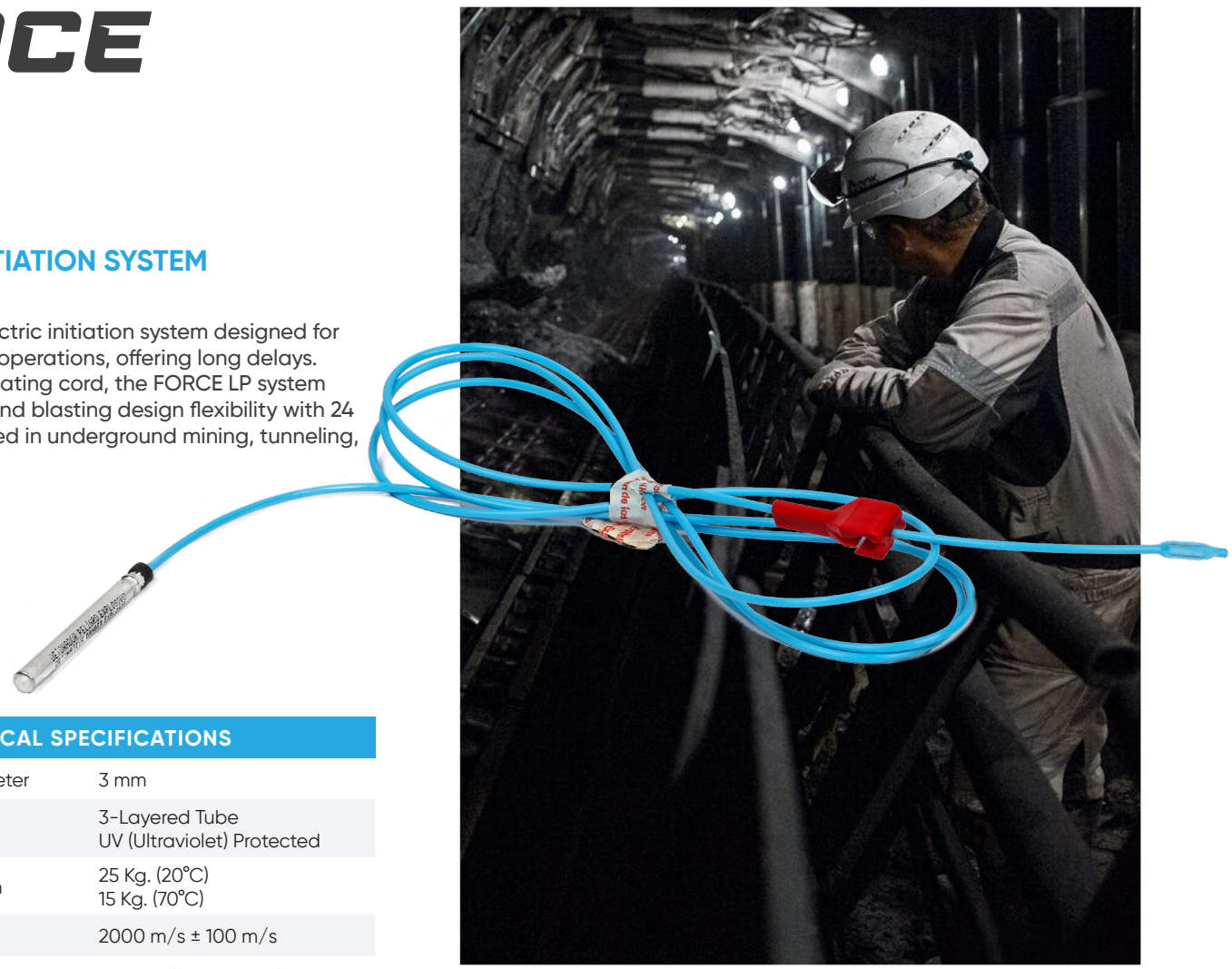
TRANSPORTATION

Detonator Assemblies, Non-electric,
Class 1.1 B, U.N. 0360, PG II
First-class quality according to European standards.

FORCE LP

NON-ELECTRIC
LONG DELAY INITIATION SYSTEM

FORCE LP is a non-electric initiation system designed for underground blasting operations, offering long delays. Connected with detonating cord, the FORCE LP system provides ease of use and blasting design flexibility with 24 delay intervals. It is used in underground mining, tunneling, and shaft operations.



TECHNICAL SPECIFICATIONS	
Shock Tube Outer Diameter	3 mm
Shock Tube Type	3-Layered Tube UV (Ultraviolet) Protected
Nominal Tensile Strength	25 Kg. (20°C) 15 Kg. (70°C)
Shock Tube Velocity	2000 m/s ± 100 m/s
Detonator Cap	940 mg (PETN + RDX)

TECHNICAL DELAY NUMBERS AND TIME INTERVALS																								
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Delay Time	100	200	300	400	500	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2500	3000	3500	4000	4500	5000	5500	6000

PACKAGING AND PRODUCT DIMENSIONS					
Length (Meters)	3	4	5	6	Other lengths can be produced upon request.
Quantity per Box	200	200	150	150	

EFFECTIVE PERFORMANCE

It is resistant to breakage and friction.
Delay times are accurate in 24 series.
Connections are quick and simple.
It has a easily identifiable appearance.
It is designed in an easy-to-use 8-shaped knot.

HIGH OPERATIONAL SAFETY

It is resistant to underground conditions. Shot control is flexible and excellent. Quick connections enhance work efficiency. Connection checking is fast. There is no tangling or entanglement.

INITIATION

The shock tube must not be damaged, pulled, or torn. Otherwise, unexpected initiation may occur. The FORCE LP capsule system is initiated with a detonating cord of 5 gr/m PETN strength.

PACKING

FORCE MS, wrapped in the shape of the number eight and packaged in antistatic PE bags within cardboard boxes.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Detonator Assemblies, Non-electric,
Class 1.1 B, U.N. 0360, PG II
First-class quality according to European standards.

FORCE HTD

NON-ELECTRIC
SHORT-DELAY INITIATION SYSTEM

FORCE HTD is a short-delay surface connection system used in blasting and designs involving non-electric detonators. It provides flexible blasting design and ease of use in shots made with FORCE TWINDET or FORCE MS borehole detonators. It is used in open pit and underground mining operations, quarries, and construction projects such as roads, dams, and pipelines

TECHNICAL SPECIFICATIONS	
Shock Tube Outer Diameter	3 mm
Shock Tube Type	Tube 3L (3 Layered) UV (Ultraviolet) Protected
Nominal Tensile Strength	25 Kg. (20°C) 15 Kg. (70°C)
Shock Tube Velocity	2000 m/s ± 100 m/s
Detonator Cap	260 mg (Lead Azide)

DELAY TIMES								
Millisecond	9	17	25	33	42	65	100	200

PACKAGING AND PRODUCT DIMENSIONS							
Length (Meters)	4	6	9	12	15	18	Other lengths can be produced upon request.
Quantity per Box	150	100	80	50	40	40	

EFFECTIVE PERFORMANCE

It is resistant to breakage and friction. Contains low energy. Provides delay with full accuracy in an 8-series. Connection is quick and easy. It has a distinct appearance that is easy to identify. Designed with an 8-shaped knot for ease of use.

HIGH OPERATIONAL SAFETY

There is no need to bury it in the ground due to its low shrapnel effect. It provides flexible and excellent shot control. It allows for design changes before firing. Quick connections increase work efficiency. It does not tangle or knot.

INITIATION

Do not damage the shock tube under any circumstances.
Do not pull or tear it forcefully.
Otherwise, unexpected detonation may occur. FORCE HTD is unidirectional.
It can be initiated with any of the following:

- Shock tube surface delay element
- Electric detonator
- Electronic detonator

FORCE HTD is not designed to initiate detonating cord. If used for this purpose, misfires may occur.

Note: The connection block contains an explosive charge capsule system. Therefore, it can detonate upon impact, friction, or high heat!

PACKING

FORCE HTD, wrapped in the shape of the number eight and packaged in antistatic PE bags within cardboard boxes.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Detonator Assemblies, Non-electric,
Class 1.4 S, U.N. 500, PG II
First-class quality according to European standards.

FORCE TWINDET

NON-ELECTRIC SURFACE-DELAY BOREHOLE DETONATOR SYSTEM

FORCE TWINDET is a non-electric initation system that combines a borehole detonator and a surface-delay element. It is used in pipeline construction, canal excavation, quarries, open-pit mining, and construction projects. It offers easy connection and control between holes. It provides precise delay both inside the borehole and on the surface.

TECHNICAL SPECIFICATIONS	
Shock Tube Outer Diameter	3 mm
Shock Tube Type	Tube 3L (3 Layered) UV (Ultraviolet) Protected
Nominal Tensile Strength	25 Kg. (20°C) 15 Kg. (70°C)
Shock Tube Velocity	2000 m/s ± 100 m/s
Detonator Cap (Borehole)	940 mg (PETN + RDX)
Detonator Cap (Surface Delay)	260 mg (Lead Azide)

DELAY TIMES								
Milisecond	9/500 ms	17/500 ms	25/475 ms	# 25/500 ms	33/500 ms	42/475 ms	42/500 ms	65/500 ms	# Standard Product

PACKAGING AND PRODUCT DIMENSIONS														
Length (Meters)	3	4	5	6	7	8	9	12	15	18	21	25	30	37	Other lengths can be produced upon request.
Quantity per Box	100	100	100	100	100	80	80	50	50	50	40	30	30	30	

EFFECTIVE PERFORMANCE

The borehole detonator and surface delay element are combined. The delay time is precisely accurate and sensitive. Connection is quick and simple. Easily noticeable in its application area.. It is highly resistant to breakage and friction. Suitable for use in all types of hot and cold weather conditions. Packaged in a shape resembling the number 8 for ease of use.

HIGH OPERATIONAL SAFETY

Reduces stock variety. Pre-blasting design changes can be made. Excellent shot control is fast. Can be used in all weather conditions. No tangling or confusion occurs. Provides cost efficiency.

INITATION

Do not use it to lower other materials into the hole except for stemming. Do not damage the shock tube during hole loading and tamping. Do not pull too hard and do not break it. Otherwise, ignition may occur. The Force Twindet ignition system is unidirectional. Ignition can be performed using the following methods:

- Other Force Twindet surface connection elements
- Shock tube surface delay element
- Electric detonator
- Electronic detonator

This block is not designed to ignite detonating cord. If used for this purpose, misfire may occur.

Note: The connection block contains a capsule with explosive material. Therefore, it may detonate due to impact, friction, or high heat!

PACKING

FORCE TWINDET is packaged in cardboard boxes wrapped in yellow antistatic PE bags shaped like the number 8.

STORAGE

It should be stored in dry, well-ventilated facilities compliant with Regulation No. 87/12028.

TRANSPORTATION

Detonator Assemblies, Non-electric,
Class 1.1 B, U.N. 0360, PG II
First-class quality according to European standards.

ELECTRIC DETONATOR

DELAYED ELECTRIC COPPER (CU) DETONATORS

Copper-shelled explosive detonators, available in 10 different numbers with a 30 ms delay, are electric detonators used in surface and underground coal mines. They are used in large-scale blasts in gaseous and dusty environments (such as coal mines) and reliably ignite grizzly dynamite and similar explosives in a staged manner at desired intervals.

INSTANTANEOUS ELECTRIC COPPER (CU) DETONATORS

Copper-shelled electric detonators used in surface and underground coal mines. They are designed for use in gaseous and dusty environments (such as coal mines) and are ideal for effectively igniting grizzly dynamite and similar explosives. Upon request, standard No. 8 detonators can be supplied with cables of desired lengths.

DELAYED ELECTRIC ALUMINUM (AL) DETONATORS

Explosive detonators with an aluminum outer shell, available in 16 different numbers with a 30ms delay, are electric detonators used in surface and underground mines. They are used in large-scale blasts and reliably ignite grizzly dynamite and similar explosives in a staged manner at desired intervals.

INSTANTANEOUS ELECTRIC ALUMINUM (AL) DETONATORS

They are electric capsules with aluminum shells used in surface and underground open pits. They are ideal for effectively detonating dynamite and similar explosives. Optionally, standard No. 8 capsules can be provided in desired cable lengths.

TECHNICAL SPECIFICATIONS (Al - ALUMINUM)	
Class	A (Sensitive)
Detonator	Aluminum
Cable	PVC-coated electrolytic copper wire
Cable Length	1.5 and 2.5 m
Methane Safety	None
Power	#8
Detonation Power	Creates a hole at least its own diameter in a 5mm lead plate.
Bridgewire Resistance	1.6 - 1.8 ohms
Firing Energy	3 mWs/ohm
Non-Firing Energy	0.8 mWs/ohm
Safety Margin	0.18 A DC
Recommended Firing Current	1.2 A
Delay Numbers	1-16
Delay Times	30 - 480 ms

TECHNICAL SPECIFICATIONS (Cu - COPPER)	
Class	A (Sensitive)
Detonator	Copper
Cable	PVC-coated electrolytic copper wire
Cable Length	1.5 and 2.5 m
Methane Safety	Present
Power	#8
Detonation Power	Creates a hole at least its own diameter in a 5mm lead plate.
Bridgewire Resistance	1.6 - 1.8 ohms
Firing Energy	3 mWs/ohm
Non-Firing Energy	0.8 mWs/ohm
Safety Margin	0.18 A DC
Recommended Firing Current	1.2 A
Delay Numbers	1-16
Delay Times	30 - 480 ms

SPECIFICATIONS

They provide effective ignition in operations such as oil, natural gas, thermal water sources, drilling works; underwater explosions, seismic research, and blasting operations conducted in moist and wet environments.

USAGE AND IGNITION

The durability of electric capsules should be checked with an ohmmeter before entering the priming process. When pneumatic charging is required, necessary measures should be taken to prevent static electricity formation; therefore, semiconductor charging hoses should be preferred. Connection cables should not be dragged or tangled on the ground, and they should be kept away from electrical devices or power cables. Connections in wet environments should be isolated with tape. All capsules in the circuit should be in the same resistance group. Ignition circuits should be tested for short circuits with an ohmmeter. Magnets specially designed for ignition should be preferred. In environments at risk of gas and dust explosions, specially produced copper-capped capsules should be used instead of aluminum-capped capsules.

PACKAGING

In cardboard boxes containing 1200/1500 capsules. 50 packs in standard boxes, each pack containing bundles of 25 capsules.
Packaging in variable quantities is possible.

STORAGE

It should be stored in dry, well-ventilated warehouses in accordance with the provisions of Regulation No. 87/12028.

TRANSPORTATION

Detonator Assemblies, Electric Detonator,
Class 1.1 B, U.N. 0030, Explosive Substance Type E

SEISMIC ELECTRIC DETONATOR

SEISMIC ELECTRIC IGNITION SYSTEM

Specially designed instant electric detonators for seismic applications provide effective ignition in operations such as oil, natural gas, thermal water sources, and drilling works; underwater and in heavily humid environments.

Fired with virtually no time delay between application of suitable current/amperage and detonation. In addition to superior accuracy, seismic electric detonators provide high output power and shock resistance.

TECHNICAL SPECIFICATIONS	
Electrical Characteristics	Type S_2
Detonator	Copper 0.5 and 0.6 mm
Cable	PE 8 PVC-coated copper
Cable Lengths	3 m - 10 m - 12 m
Safe Firing Current - I_0	0.40 A
Single Firing Current - I_1	> 4,60 A
Series Firing Current - I_{100}	> 6,00 A
Power	#8
Bridgewire Resistance	0,6 - 0,8 ohm
Firing Impulse	8,0 / 16,00 mJ/ohm
Delay Time	< 1 ms @ 5 A

SPECIFICATIONS

Seismic electric detonators are designed to meet the most precise measurement standards required to obtain accurate seismic records. They are more resilient to external influences such as water, corrosive environments, and high temperatures compared to standard electric detonators. They are also more resistant to uncontrolled effects that could cause explosions, such as static energy and radio frequency.

USAGE AND IGNITION

The fusehead, which has higher energy compared to standard ignition systems, rapidly transmits ignition to the primary explosive, ensuring the capsule is fired as quickly as possible. The time taken from receiving the electrical energy until completion of ignition is less than 1 millisecond.

PACKING

3m - 500 pieces
10m - 150 pieces
12m - 150 pieces

STORAGE

It should be stored in dry, well-ventilated warehouses in compliance with the provisions of Regulation No. 87/12028.

TRANSPORTATION

Igniters, Electric Initiating
Class 1.4B, U.N. 0255

EXPLOSION HOLE CHARGE DENSITY (Kg/m)

EXPLOSIVE MATERIAL DENSITY

Hole Diameter (mm)	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05	1.1	1.15	1.2	1.25	1.3	Hole Diameter (Inç)
31.8	0.40	0.44	0.48	0.52	0.56	0.60	0.64	0.68	0.71	0.75	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1 1/4
34.9	0.48	0.53	0.57	0.62	0.67	0.72	0.77	0.81	0.86	0.91	0.96	1.00	1.05	1.10	1.15	1.20	1.24	1 3/8
38.1	0.57	0.63	0.68	0.74	0.80	0.86	0.91	0.97	1.03	1.08	1.14	1.20	1.25	1.31	1.37	1.43	1.48	1 1/2
41.3	0.67	0.74	0.80	0.87	0.94	1.00	1.07	1.14	1.21	1.27	1.34	1.41	1.47	1.5	1.61	1.67	1.74	1 5/8
44.5	0.78	0.86	0.93	1.01	1.09	1.17	1.24	1.32	1.40	1.48	1.56	1.63	1.71	1.79	1.87	1.94	2.02	1 3/4
50.8	1.01	1.11	1.22	1.32	1.42	1.52	1.62	1.72	1.82	1.93	2.03	2.13	2.23	2.33	2.43	2.53	2.63	2
57.2	1.28	1.41	1.54	1.67	1.80	1.93	2.06	2.18	2.31	2.44	2.57	2.70	2.83	2.96	3.08	3.21	3.34	2 1/4
63.5	1.58	1.74	1.90	2.06	2.22	2.38	2.53	2.69	2.85	3.01	3.17	3.33	3.48	3.64	3.80	3.96	4.12	2 1/2
69.9	1.92	2.11	2.30	2.49	2.69	2.88	3.07	3.26	3.45	3.65	3.84	4.03	4.22	4.41	4.60	4.80	4.99	2 3/4
76.2	2.28	2.51	2.74	2.96	3.19	3.42	3.65	3.88	4.10	4.33	4.56	4.79	5.02	5.24	5.47	5.70	5.93	3
88.9	3.10	3.41	3.72	4.03	4.35	4.66	4.97	5.28	5.59	5.90	6.21	6.52	6.83	7.14	7.45	7.76	8.07	3 1/2
102	4.05	4.46	4.86	5.27	5.68	6.08	6.49	6.89	7.30	7.70	8.11	8.51	8.92	9.32	9.73	10.13	10.54	4
108	4.58	5.04	5.50	5.95	6.41	6.87	7.33	7.79	8.24	8.70	9.16	9.62	10.08	10.54	10.99	11.45	11.91	4 1/4
114	5.13	5.64	6.16	6.67	7.18	7.70	8.21	8.72	9.23	9.75	10.26	10.77	11.29	11.80	12.31	12.83	13.34	4 1/2
121	5.72	6.29	6.87	7.44	8.01	8.58	9.15	9.73	10.30	10.87	11.44	12.01	12.59	13.16	13.73	14.30	14.87	4 3/4
127	6.33	6.97	7.60	8.23	8.87	9.50	10.13	10.77	11.40	12.03	12.67	13.30	13.93	14.57	15.20	15.83	16.47	5
140	7.66	8.43	9.20	9.96	10.73	11.50	12.26	13.03	13.80	14.56	15.33	16.09	16.86	17.63	18.39	19.16	19.93	5 1/2
152	9.12	10.03	10.94	11.86	12.77	13.68	14.59	15.51	16.42	17.33	18.24	19.15	20.07	20.98	21.89	22.80	23.71	6
159	9.90	10.89	11.88	12.87	13.86	14.85	15.84	16.83	17.83	18.82	19.81	20.80	21.79	22.78	23.77	24.76	25.75	6 1/4
165	10.70	11.77	12.85	13.92	14.99	16.06	17.13	18.20	19.27	20.34	21.41	22.48	23.55	24.62	25.69	26.76	27.83	6 1/2
172	11.55	12.71	13.86	15.02	16.17	17.33	18.48	19.64	20.79	21.95	23.10	24.26	25.41	26.57	27.72	28.82	30.03	6 3/4
178	12.41	13.66	14.90	16.14	17.38	18.62	19.86	21.10	22.35	23.59	24.83	26.07	27.31	28.55	29.79	31.04	32.28	7
187	13.78	15.15	16.53	17.91	19.29	20.66	22.04	23.42	24.80	26.18	27.55	28.93	30.31	31.69	33.06	34.44	35.82	7 3/8
194	14.73	16.21	17.68	19.15	20.63	22.10	23.57	25.05	26.52	27.99	29.47	30.94	32.41	33.89	35.36	36.83	38.31	7 5/8
203	16.21	17.84	19.46	21.08	22.70	24.32	25.94	27.56	29.19	30.81	32.43	34.05	35.67	37.29	38.92	40.54	42.16	8
229	20.52	22.57	24.63	26.68	28.73	30.78	32.83	34.89	36.94	38.99	41.04	43.10	45.15	47.20	49.25	51.30	53.36	9
251	24.70	27.17	29.64	32.11	34.58	37.05	39.52	41.99	44.46	46.93	49.40	51.87	54.34	56.81	59.28	61.75	64.22	9 7/8
254	25.34	27.87	30.40	32.94	35.47	38.00	40.54	43.07	45.60	48.14	50.67	53.20	55.74	58.27	60.81	63.34	65.87	10

NOBEL EXPLOSIVES

NOBEL EXPLOSIVES PATLAYICI MADDELER SAN. VE TİC. A.Ş.

HEADQUARTERS

Hülya Sk. No:45 06700
G.O.P. Ankara/TÜRKİYE
Tel : +90 312 446 16 00
Fax : +90 312 446 15 55

FACTORY

Lalahan Karşıyaka Mah.
Ekinciler Mevkii No:12
Mamak/Ankara/TÜRKİYE

NOBEL SİVİL PATLAYICI

NOBEL SİVİL PATLAYICI MADDELER SAVUNMA SAN. VE TİC. A.Ş.

Sales - Marketing, Distribution, Storage

Cumhuriyet Sok. No: 200/1
Aliköy/Tavşanlı/Kütahya
Tel : +90 242 248 80 67
Fax : +90 242 248 80 97

AFFILIATES

ANKA NİTRO

ANKA NİTRO PATLAYICI MADDELER SAN. VE TİC. LTD. ŞTİ.

Sales - Marketing, Distribution, Storage

İsmetpaşa Mahallesi Bülent Ecevit Caddesi 50/4 Elmadağ /Ankara

Tel : +90 312 863 6 444
Fax : +90 312 863 6 555

KARADENİZ NİTRO

KARADENİZ NİTRO PATLAYICI MADDE SAN. VE TİC. A.Ş.

Sales - Marketing, Distribution, Storage

Karşıyaka Mah. Osmanbey Cad. No:36/6 Merkez/Gümüşhane

Tel : +90 456 213 36 36
Fax : +90 456 213 54 00

KAYSAN SİLAH SANAYİ

KAYSAN SİLAH SANAYİ TİCARET LTD. ŞTİ.

New Productions, Distribution, Storage

İsmetpaşa Mah.
Milli Egemenlik Cad. Aras Galeria No:2/A Dulkadiroğlu / Kahramanmaraş

Tel : +90 344 214 67 56
Fax : +90 344 225 33 78

ANTALYA NİTRO

ANTALYA NİTRO PATLAYICI MADDE DAN. PAZARLAMA NAKLİYE TİC. LTD. ŞTİ.

Distribution, Storage

Tahıl Pazarı Mah. Adnan Menderes Bul. 471 Sok. Bilen İş Merkezi Kat:7 NO:20 Muratpaşa/ANTALYA

Tel : +90 242 248 80 67
Fax : +90 242 248 80 97

AK-DENİZ PATLAYICI

AK-DENİZ PATLAYICI KİMYASAL MADDE MÜH. DAN. PAZ. İNŞ. A.Ş.

Distribution, Storage

Müslihittin Mah. Cemak Kara Muğla Sok. Varol İş Merkezi No: 56/2 Menteşe/MUĞLA

Tel : +90 252 214 94 04
Fax : +90 252 214 94 20

GEO NİTRO

Sales - Marketing, Distribution, Storage

Ofis: Georgia/Tbilisi,
Chavchavadze Ave. No:78
Tesis: Georgia, Mameuli
Industrial Zone

Gsm: +995 557 52 40 88
Fax : +995 32 236 92 33

NOBEL EXPLOSIVES

GENEL MÜDÜRLÜK
Hülya Sokak No: 45
06700, G.O.P./**Ankara** / **TÜRKİYE**

+90 (312) 446 16 00
+90 (312) 446 15 55

www.nobelexplosives.com
info@nobelexplosives.com

FABRİKA
Lalahan, Karşıyaka Mah. Ekincik Mevkii Serpmeleri
No: 12 Mamak / **Ankara** / **TÜRKİYE**

+90 (312) 865 19 63