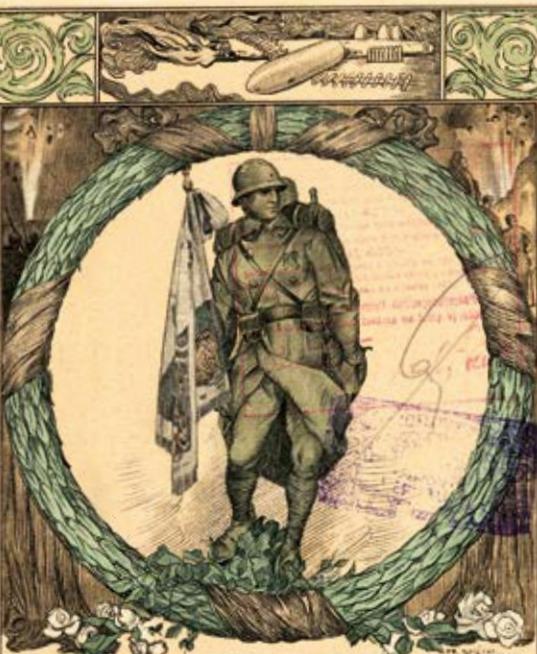




**EXPLOSIVES**





Kč 200.—      ČÍSLO 0003328

## AKCIE

### ČESKOSLOVENSKÉ AKC. TOVÁRNY NA LÁTKY VÝBUŠNÉ

NA OBNOS  
**DVĚ STĚ KORUN ě,**

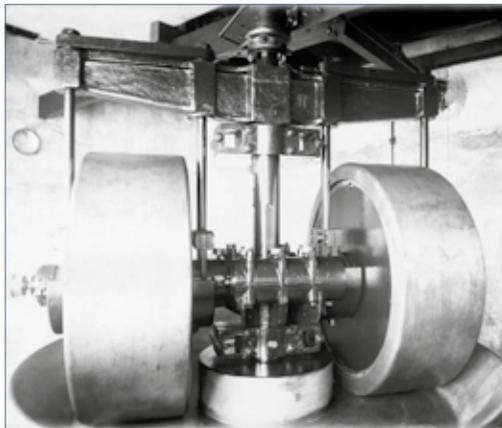
*Česká průmyslová banka v Praze* jakožto vlastníku této akcie zajišťují všechna práva k veškerému jmění společnosti, která dle stanov společnosti každému akcionáři přísluší.

Akcie mohou být převedeny též na jiné osoby, převedení to musí se však státi se svolením správní rady, při čemž musí být ta která akcie předložena, aby její převedení v knize akcijní zaznamenáno být mohlo.

V PRAZE, DNE 5. PROSINCE 1920.

**Československá akciová továrna na látky výbušné.**

*W. S. J. Procházka*      *O. M. Veselý*



SINCE 1920



## Explosia a.s.

**Explosia a.s.** is the traditional and most important Czech manufacturer of explosives with a history dating to 1920, when „Československá akciová továrna na látky výbušné“ (Czechoslovak joint-stock company for the production of explosive substances) was founded in Semtín, near Pardubice. The history of the name Explosia a.s. dates back to 1934 (until 1946) and the tradition was renewed in 1998.

**Explosia a.s.** is 100% in the ownership of the Czech Republic; it is an independent commercial company with a significant position on the market of industrial explosives in the Czech Republic.

**Explosia a.s.** is an internationally famous and important manufacturer of industrial explosives exported to a number of countries in the European Union and outside it.

**Explosia a.s.** has available production and storage capacities serviced by qualified personnel, which makes it possible to offer a complete line of industrial explosives and igniters for all spheres of surface and underground applications carried out by mining companies or companies providing blasting services. As a matter of fact, explosives can be delivered directly to the firing site and mixing and loading vehicles can be operated. FOSPOL gradually took over these services as a specialized division of Explosia a.s.

### Research and development in the field of explosives – special products

The Research Institute for Industrial Chemistry (VÚPCH), founded in 1954 is the part of Explosia a.s. This institute ensures research and development in the field of explosives and ammunition not only for Explosia a.s., but also for other partners within the Czech Republic and abroad. Apart from research and development, whose results are intended both for industrial applications and the military sphere, VÚPCH offers services in the field of analytical chemistry, testing and safety engineering for explosives and ammunition, small tonnage production of new energy materials and special explosives and the production of pyrotechnic components for aircraft rescue systems.

### Quality control management

The quality control system was introduced in the company in 1998 in the extent corresponding to the ISO 9001 standard. Since 2003, after successfully passing the re-certification audit, Explosia a.s. has been the holder of the Certificate according to system standard EN ISO 9001:2000 standard and since 2004, the holder of a Certificate of quality system conformity with the AQAP 2110 requirements. Another recertification audit in accordance with the ISO 9001 standard proceeded successfully in 2006.



# Industrial Explosives – Products and Services

## Powder Explosives (AMMONITES)

are industrial explosives based especially on ammonium nitrate. There is ANFO type (Ammonium Nitrate Fuel Oil) Permon® DAP M and a mixture with TNT Permon® 10T which are suitable for dry borehole conditions.

All kinds can be supplied in bags or in cartridges as well. It is used for quarry, surface mining, construction and except Permon 10T for underground blasting operations too.

## Emulsion explosives

are industrial explosives with excellent water resistance. There are many types – bulk or cartridge, booster or detonator sensitive; designed for quarry and construction blasting.

## Dynamite (gelatinous) explosives

are nitroglycerine-nitroglycol based explosives designated to satisfy the vast majority of explosive applications in soft to hard rock types. Small diameters are packed in paper, large in PE foil. It is possible to use it as a booster as well.

## Permissible explosives (Permitted Explosives)

are industrial explosives intended for mines with a different measure of danger of the incidence of explosive mixtures of firedamps and coal dust with air. They are supplied in paper cartridges. These explosives are designated by colours depending on their classification from the point of view of the safety in mines. Safe underground explosives of category II are denoted by their green colour, explosives of category I by their white colour.

## Explosives for special and military use

are intended for special use, for example, during blasting works under pressure, under water, during geoseismic surveys and for destruction and other special works. Some of these explosives are used as initiating charges.

## Black powder

are mixtures of potassium nitrate, sulphur and charcoal. They are used as powders for blasting, timing, pyrotechnic purposes, in hunting ammunition and for firing from vintage firearms.

## STARTLINE detonating cord

is a flexible cord with a core made of a high explosive material pextrite (PETN). It is used primarily for ensuring the transmission of detonation.

## High explosives – raw material

e.g. for production of boosters, detonating cord, plastic explosives, filling of hand grenades etc.

## Mixing and pump trucks

are a modern means of blasting technique that transport in explosive components or mixtures thereof to the consumption site, where they prepare the explosive by mixing and sensitizing it and charging it into the boreholes at the same time.

## Drilling and blasting service

are all the services necessary for the preparation and carrying out of blasting and are provided with various degrees of complexity. They consist primarily of drilling and blasting works, supplies of explosives and initiators to the blasting sites, blast master works and providing blasters, including the charging service, loading and transportation.



## Contens

POWDER EXPLOSIVES .....	6
EMULSION EXPLOSIVES .....	10
GELATINOUS EXPLOSIVES .....	14
PERMITTED EXPLOSIVES .....	18
EXPLOSIVES FOR SPECIAL USE .....	20

BLACK POWDER .....	26
DETONATING CORDS .....	28
HIGH EXPLOSIVES - RAW MATERIAL .....	30
MIXING AND PUMP TRUCKS .....	32
DRILLING AND BLASTING SERVICES .....	35



# POWDER EXPLOSIVES




**PERMON® 10T**
**CE number: 0589.EXP.6136/03**

The PERMON® 10T is an opencast ammonium nitrate explosive containing TNT. The classic method of its production by wheel mill technology guarantees perfect homogenization of the components and thus also the high and stable quality.

It is used for blasting works on surfaces in a dry environment. It can be used particularly in soft and medium hard rocks, the best is for sand and gravel extraction. It is supplied in cartridges or bags. It does not contain carcinogenic DNT.

**Classification:**

UN 0082, EXPLOSIVE, BLASTING, TYPE B, 1.1 D, ADR



Parametr	Unit of measure	PERMON® 10T
Explosion heat*	kJ/kg	4,079
Gas volume*	dm <sup>3</sup> /kg	928
Temperature of explosion*	°C	2,749
Oxygen balance*	% O <sub>2</sub>	+ 0.17
Brisance according to Hess	mm	14
Relative working ability	%	84
Transmission of detonation (in 65 mm, non confined)	cm	2
Bulk density	kg/m <sup>3</sup>	min. 800
Density in the cartridge	kg/m <sup>3</sup>	1,050
Firing	-	detonator No. 8
Water resistance (large diameter cartridges)	-	does not resist water
Shelf life	month	6

\* The values determined by calculation

**Packaging**

	65	75	90	PE bags	Large diameter cartridges are packaged in a PE hose.
Diameter [mm]					
Mass [g]	2,000	2,500	3,400	25,000	
Length [mm]	585	585	585	-	
Net weight [kg]/box	24	25	23.8	-	



## PERMON® DAP M

CE: 0589.EXP.4183/05

PERMON® DAP M is ANFO type explosive.

It is used for surface and underground blasting works in an inexplusive and dry environment. It is usually supplied in bags and is intended for gravitational and mechanical charging. It can be supplied in cartridges as well.

### Classification:

UN 0082, EXPLOSIVE, BLASTING, TYPE B, 1.1 D, ADR



## PERMON® DAP E

CE: 1395-012/2006

ANFO type of explosives with alluminium.

Parametr	Unit of measure	PERMON® DAP M	PERMON® DAP-E
Explosion heat*	kJ/kg	3,700	4,200
Gas volume*	dm <sup>3</sup> /kg	970	920
Temperature of explosion*	°C	2,400	2,600
Oxygen balance*	% O <sub>2</sub>	+ 0.3	+ 0.1
Detonation speed (in 43 mm, steel pipe)/DAP E fi. 32 mm	m/s	min. 3,500	min. 2,800
Velocity of detonation in the borehole (in 95 mm, usual value)	m/s	4,000	4,000
Bulk density	kg/m <sup>3</sup>	min. 650	min. 650
Firing			
- borehole max. 60 mm mechanically	-	booster min. 100 g	booster min. 100 g
- in bulk and above 60 mm	-	booster min. 250 g	booster min. 250 g
Water resistance	-	does not resist water	does not resist water
Smallest permitted diameter	mm	43	32
Shelf life	month	6	6

\* The values determined by calculation

### Packaging

### PERMON® DAP M, DAP-E

Kind of packaging	PE bag
Mass [kg]	25

### Packaging

### PERMON® DAP M, DAP-E

Diameter [mm]	65	75	75
Mass [g]	1,800	2,000	2,500
Net weight [kg] /box	18	20	20



## PERMONEX® V19

CE: 0589.EXP.1041/01

The underground mining explosive PERMONEX® V 19 is an ammonium nitrate explosive containing TNT. The classical method of its production by wheel mill technology guarantees perfect homogenization of its components and thus also the high and stable quality of the explosive.

It is used for surface and underground blasting works in an inexpensive environment. It is supplied in cartridges and in bags. It is used for blasting works in a wet environment and under water. It does not contain carcinogenic DNT.

### Classification:

UN 0082, EXPLOSIVE, BLASTING, TYPE B, 1.1 D, ADR



## PERMONEX® 10E

CE: 1019-165/V/2016

Brand new ecological underground mining explosive of powder type, it does not contain TNT.

Parametr	Unit of measure	PERMONEX® V19	PERMONEX® 10E
Explosion heat*	kJ.kg <sup>-1</sup>	4,158	3,922
Gas volume*	dm <sup>3</sup> /kg	895	921
Temperature of explosion*	°C	2,875	2,653
Oxygen balance*	% O <sub>2</sub>	0.1	0.33
Velocity of detonation	m/s	min. 3,900	min. 3,700
Brisance according to Hess, min.	mm	16	15.7
Density, min.	g/cm <sup>3</sup>	0.9	0.8
Firing	-	detonator No. 8	detonator No. 8
Shelf life	month	6	6

\* The values determined by calculation

### Packaging

	PERMONEX®								
	50	60	75	50	60	65	75	90	PE bags
Diameter [mm]	50	60	75	50	60	65	75	90	PE bags
Mass [g]	780*	1,190*	1,785*	1,250	2,000	2,500	2,500	4,000	25,000
Length [mm]	400	400	400	520*	660*	675*	575*	600*	-
Net weight [kg]/box	25	25	25	25	20	25	25	24	-

\*These numbers are only approximate.





# EMULSION EXPLOSIVES



# EMSIT® V

CE: 0589.EXP.1985/06

The EMSIT® V opencast explosive is a modern emulsion type with a high detonation velocity and outstanding resistance to water. The explosive is packaged by a modern cartridge machine into a thermally and mechanically resistant foil with a high strength weld.

It is used in large diameters as an efficient explosive during blasting works, where wet or saturated blast holes occur.

Contrary to the EMSIT® M explosive, EMSIT® V has a stiffer consistency. It is necessary to use an initiating explosive charge for detonation with a velocity of detonation of at least 6,000 m/s.

### Classification:

UN 0241, EXPLOSIVE, BLASTING, TYPE E, 1.1 D, ADR



Parametr	Unit of measure	EMSIT® V
Explosion heat*	kJ/kg	2,800
Gas volume*	dm <sup>3</sup> /kg	800
Temperature of explosion*	°C	1,800
Oxygen balance*	% O <sub>2</sub>	+ 0.5
Velocity of detonation (in 65 mm, non confined)	m/s	5,000
Transmission of detonation (in 50 mm, non confined)	cm	on touch
Density	kg/m <sup>3</sup>	min. 1,150
Firing	-	booster min. 500 g
Water resistance	-	24 hrs/0.3 Mpa
Smallest permitted diameter	mm	50
Shelf life	month	12

\* The values determined by calculation

Packaging	EMSIT® V			
Diameter [mm]	50	65	75	90
Mass [g]	1,250	2,500	2,500	3,000
Length [mm]	approximately 560	approximately 600	approximately 515	approximately 400
Net weight [kg]/box	25	25	20	24

Note: The lengths of the charges are variable, depending on the density of the emulsion matrix.




**EMSIT® M**

CE: 1019-083/V/2004


**EMSIT® 1**

CE: 0589.EXP.0139/01

Underground blasting agent EMSIT® M and EMSIT® 1 is an explosive of a modern emulsion type with a high velocity of detonation and excellent resistance to water. The explosive is packaged by a modern cartridge machine into a thermally and mechanically resistant foil with a very strong weld. It is used in small and large diameters as an efficient explosive during blasting works, where wet or saturated blast holes occur. It has also found application during underground blasting works.

It is cap sensitive.

**Classification:**

UN 0241, EXPLOSIVE, BLASTING, TYPE E, 1.1 D, ADR



Parametr	Unit of measure	EMSIT® M, 1
Explosion heat*	kJ/kg	2,800
Gas volume*	dm <sup>3</sup> /kg	800
Temperature of explosion*	°C	1,800
Oxygen balance*	% O <sub>2</sub>	+ 0.5
Velocity of detonation (in 30 mm, non confined)	m/s	4,700
Velocity of detonation (in 65 mm, non confined)	m/s	5,000
Brisance according to Hess	mm	14
Relative working ability	%	60
Transmission of detonation (in 50 mm, in 30 mm, non confined)	cm	on touch
Density	kg/m <sup>3</sup>	min. 1,050
Firing	-	detonator No. 8
Water resistance	-	24 hrs/0.3 MPa
Smallest permitted diameter	mm	30
Shelf life	month	12

\* The values determined by calculation

Packaging	EMSIT® M, 1					
Diameter [mm]	30	38	50	65	75	90
Mass [g]	500	463	1,250	2,500	2,500	3,000
Length [mm]	680	393	540/590	660/690	500/520	435/450
Net weight [kg]/box	22	25	25	25	20	24

Note: The lengths of the charges are variable depending on the density of the emulsion matrix.



## EMULSION MATRIX

Emulsion matrix is a mixture of ammonium nitrate, sodium nitrate and oil phase, it is used for production of emulsion explosives – cartridges or material for pump trucks.

### Classification:

UN 3218 NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S., 5.1. ADR

Parametr	Unit of measure	EMULSION MATRIX
Density	kg/m <sup>3</sup>	min. 1,350

### Packaging

in IBC containers, drums, pump trucks or tanks, IBC containers per 1000 kg, usually 23 tones per truck.





# GELATINOUS EXPLOSIVES





## PERUNIT® E

CE: 0589.EXP.0556/07

The underground mining explosive PERUNIT® E is an explosive of a dynamite type with a high content of energy, high density and high values of the velocity of detonation. It is used in underground workplaces in an unexplosive environment and on surfaces where the character of the material broken requires the use of a powerful explosive. Large diameter explosive cartridges are suitable primarily for initiating explosives.

This traditional explosive was innovated again in 2007 and does not contain DNT and TNT, which are dangerous to the health.

### Classification:

UN 0081, EXPLOSIVE, BLASTING, TYPE A, 1.1 D, ADR



Parametr	Unit of measure	PERUNIT® E
Explosion heat*	kJ/kg	min. 4,100
Gas volume*	dm <sup>3</sup> /kg	858
Temperature of explosion*	°C	min. 3,000
Oxygen balance*	% O <sub>2</sub>	+ 2.2
Velocity of detonation (in 65 mm, non confined)	m/s	6,200
Velocity of detonation (in 28 mm, non confined)	m/s	2,400
Velocity of detonation in the borehole (in 95 mm, usual value)	m/s	6,200
Brisance according to Hess	mm	min. 14
Relative working ability	%	min. 78
Transmission of detonation (large diameter cartridges non confined)	cm	min. 4
Density	kg/m <sup>3</sup>	min. 1,300
Firing	-	detonator No. 8
Water resistance (large diameter cartridges)	-	12 hrs /0.3 MPa
Water resistance (small diameter cartridges)	-	2 hrs/0.01 MPa
Smallest permitted diameter	mm	28
Shelf life	month	12

\* The values determined by calculation

Packaging	PERUNIT® E									
Diameter [mm]	28	32	38	50	60	65	70	80	90	120
Mass [g]	200	250	500	1,250	2,083	2,500	2,500	3,125	4,167	8,333
Length [mm]	220	200	320	440	610	550	450	450	480	550
Net weight [kg]/box	25	25	25	25	25	25	25	25	25	25

Small diameter cartridges (28 mm to 38 mm) are packaged in waxed paper.  
Large diameter cartridges (50 mm to 120 mm) are packaged in a PE foil.



# INFERNIT® 45

CE: ENB/B/087/04

The INFERNIT® 45 plastic explosive is an explosive of a classical dynamite type with a high content of energy, high density and high values of the velocity of detonation. Moreover, it features stabilized velocity of detonation even in small diameters.

It is used primarily as an initiator in all diameters, furthermore for secondary disintegration, geoseismic surveys and wherever the stabilized velocity of detonation can be used. It contains neither carcinogenic DNT nor toxic TNT.

### Classification:

UN 0081, EXPLOSIVE, BLASTING, TYPE A, 1.1 D, ADR



Parametr	Unit of measure	INFERNIT® 45
Explosion heat*	kJ/kg	4,680
Gas volume*	dm <sup>3</sup> /kg	717
Temperature of explosion*	°C	3,400
Oxygen balance*	% O <sub>2</sub>	+ 1.5
Velocity of detonation (in 65mm, non confined)	m/s	6,200
Velocity of detonation (in 28mm, non confined)	m/s	min. 6,000
Brisance according to Hess	mm	22
Relative working ability	%	70
Transmission of detonation (large diameter cartridges non confined)	cm	10
Density	kg/m <sup>3</sup>	1,450
Firing	-	detonator No. 8
Water resistance (large diameter cartridges)	-	24 hrs/0.8 MPa
Water resistance (small diameter cartridges)	-	10 hrs/0.1 MPa
Smallest permitted diameter	mm	22
Shelf life	month	12

\* The values determined by calculation

Packaging	INFERNIT® 45			
Diameter [mm]	28	38	50	65
Mass [g]	200	500	1,250	2,500
Length [mm]	220	320	410	510
Net weight [kg]/box	25	25	25	25

Small diameter cartridges (22 mm to 38 mm) are packaged in waxed paper.  
Large diameter cartridges (50 mm to 120 mm) are packaged in a PE hose.







# PERMITTED EXPLOSIVES



## **OSTRAVIT® C**

**CE: 0589.EXP.0931/04**

The OSTRAVIT® C permitted explosive (safe in a gaseous environment) is a semiplastic explosive on the basis of exchange ions and components decreasing the tendency of the explosive to deflagration, containing liquid nitroester. The explosive is classified in the DBT II category and is used for blasting works in accordance with the instructions for its use in coal mines with a high danger of firedamps and coal dust.

### **Classification:**

UN 0081, EXPLOSIVE, BLASTING, TYPE A, 1.1 D, ADR



## **SLAVIT® V**

**CE: 1019-027/V/2010**

SLAVIT® V permitted explosive (safe in a gaseous environment) is a semiplastic explosive containing sodium chloride and liquid nitroester. The explosive is classified in the DBT I category and is used for blasting works in accordance with the instructions for its use in coal mines with the danger of explosion of firedamps and coal dust.

Pneumatic charging of the explosive is permitted.

### **Classification:**

UN 0081, EXPLOSIVE, BLASTING, TYPE A, 1.1 D, ADR

Parametr	Unit of measure	OSTRAVIT® C	SLAVIT® V
Explosion heat*	kJ/kg	2,070	3,100
Gas volume*	dm <sup>3</sup> /kg	570	625
Temperature of explosion*	°C	1,500	1,900
Oxygen balance*	% O <sub>2</sub>	+ 3,5	+ 2,4
Velocity of detonation	m/s	1,900	2,500
Brisance according to Hess	mm	6	12
Relative working ability	%	30	55
Transmission of detonation	cm	6	1
Density	kg/m <sup>3</sup>	1,150	1,100
Firing	-	detonator No. 8	detonator No. 8
Water resistance	-	2 hrs/0.01 MPa	3 hrs/0.01 MPa
Smallest permitted diameter	mm	30	30
Shelf life	month	9	9

\* The values determined by calculation

Packaging	Diameter (mm)	Mass (g)	Length (mm)	Netto [kg]/box
<b>OSTRAVIT® C</b>	30	200	225	24
<b>SLAVIT® V</b>	30	200	225	24



# EXPLOSIVES FOR SPECIAL USE



# SEMTEX® 1A

CE:0589.EXP.0138/01

SEMTEX® 1A is a plastic explosive for special use on the basis of an inexplusive plasticizer with penthrite as an active component. The explosive contains a marking substance for pre-explosive detection.

It is used primarily for destruction works, underwater blasting works (up to 100 m), special blasting works and as an initiator. The explosive can be split and shaped under the conditions indicated in the instruction manual for its use.

### Classification:

UN 0084, EXPLOSIVE, BLASTING, TYPE D, 1.1 D



Parametr	Unit of measure	SEMTEX® 1A
Explosion heat*	kJ/kg	2,648
Gas volume*	dm <sup>3</sup> /kg	1,140
Temperature of explosion*	°C	1,991
Oxygen balance*	%O <sub>2</sub>	- 63,4
Content of high explosive	%	PETN 83
Velocity of detonation	m/s	min. 7,000 typ. 7,300
Brisance according to Hess (2 plate, 50 g)	mm	min. 21
Relative working ability	%	min. 72
Density	kg/m <sup>3</sup>	min. 1,340 typ. 1,400
Firing	-	detonator No. 8
Water resistance	-	10 hrs/1 MPa
Smallest permitted diameter	mm	3
Shelf life	year	2

\* The values determined by calculation

Packaging	SEMTEX® 1A			
	16	21	-	-
Diameter [mm]	16	21	-	-
Mass [g]	150	250	1,000	2,500
Cartridge shape	prolate	prolate	brick	brick
Net weight [kg]/box	15.6	20	25	25



## SEMTEX® 1H

CE: 0589.EXP.2478/04

SEMTEX® 1H is a plastic explosive for special use on the basis of an inexplusive plasticizer with penthrite and hexogene as active components. The explosive contains a marking substance for pre-explosive detection. It is used primarily for destruction works, underwater blasting works (up to 100m of water column) and special blasting works. The explosive can be split and shaped under the conditions indicated in the instruction manual for its use.

### Classification:

UN 0084, EXPLOSIVE, BLASTING, TYPE D, 1.1 D

## SEMTEX® 10

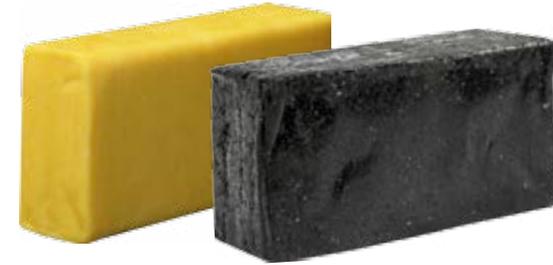
CE: 0589.EXP.0932/04

SEMTEX® 10 is a plastic explosive for special use on the basis of an inexplusive plasticizer with penthrite as an active component. The explosive contains a marking substance for pre-explosive detection. It is used primarily for special destruction and blasting works, underwater blasting works (up to 100m of water column). This black explosive can be shaped well and has good adhesive properties.

The explosive can be split and shaped under the conditions indicated in the instruction manual for its use.

### Classification:

UN 0084, EXPLOSIVE, BLASTING, TYPE D, 1.1 D



Parametr	Unit of measure	SEMTEX® 1H	SEMTEX® 10
Explosion heat*	kJ/kg	2,765	3,679
Gas volume*	dm <sup>3</sup> /kg	1,171	1,005
Temperature of explosion*	°C	2,073	2,759
Oxygen balance*	% O <sub>2</sub>	- 64	- 44
Content of high explosive	%	RDX / PETN 85	PETN 86
Velocity of detonation	m/s	min. 7,000	min. 7,200
		typ. 7,500	typ. 7,600
Brisance according to Hess (2 plate, 50 g)	mm	min. 21	min. 21
Relative working ability	%	min. 69	min. 65
Density	kg/m <sup>3</sup>	min. 1,400	min. 1,400
		typ. 1,460	typ. 1,510
Firing	-	detonator No. 8	detonator No. 8
Water resistance	-	10 hrs/1 MPa	10 hrs/1 MPa
Smallest permitted diameter	mm	5	4
Shelf life	year	5	10

\* The values determined by calculation

### Packaging

The SEMTEX® 1H and SEMTEX® 10 explosives are packaged in waxed paper. They are supplied in the form of bricks with a mass from 250 to 3,000g according to the customer's requirements. There are 24 or 25 kg of explosives in the transport packaging.



## SEMTEX® 10-SE

CE: 0589.EXP.5745/03

SEMTEX® 10-SE is a plastic explosive for special use on the basis of an inexplusive plasticizer with penthrite as an active component. The explosive contains a marking substance for pre-explosive detection. It is used for the explosive hardening of metallic materials. The explosive is white, can be well shaped and has good adhesion; it is supplied in a sheet charge form. The explosive can be split and shaped under the conditions indicated in the instruction manual for its use.



## SEMTEX® S 30

CE: 1019-118/V/2004

SEMTEX® S 30 is an explosive for special use with penthrite as an active component.

It is used for explosive cladding and welding of metals. SEMTEX® S 30 is a white bulk material.

Parametr	Unit of measure	SEMTEX® 10-SE	SEMTEX® S 30
Explosion heat*	kJ/kg	2,709	1,277
Gas volume*	dm <sup>3</sup> /kg	1,100	420
Temperature of explosion*	°C	1,975	1,023
Oxygen balance*	% O <sub>2</sub>	- 59	- 3
Content of high explosive	%	PETN 78	PETN 30
Velocity of detonation	m/s	min. 6,700	min. 2,000
		typ. 7,100	typ. 2,200
Brisance according to Hess (3 plate, 50g)	mm	min. 14	min. 9
Relative working ability	%	min. 70	-
Density	kg/m <sup>3</sup>	min. 1,450	min. 1,000
		typ. 1,470	typ. 1,050
Firing	-	detonator No. 8	detonator No. 8
Water resistance	-	0,3 MPa	-
Smallest permitted layer	mm	1,5	10
Shelf life	year	2	1

\* The values determined by calculation

### Packaging

SEMTEX® 10-SE is supplied in the form of a sheet charge 300 x 2 mm and a length corresponding to 10 kg, i.e. approximately 10 m. The explosive charge is covered with a PE foil on both sides and wound on a coil. One box contains 2 rolls = 20 kg.

SEMTEX® S 30 is packaged into 20 or 25 kg PE bags and a transport package.



# SEMTEX® C-4

CE: 0589.EXP.5223/04

## SEMTEX® PW 4 (PE-4)

SEMTEX® C-4 and PW 4 (PE-4) are plastic explosives for special use on the basis of an inexplusive plasticizer with Hexogene (RDX) as an active component. The explosive contains a marking substance for pre-explosive detection. These explosives of the SEMTEX® type have the highest velocity of detonation.

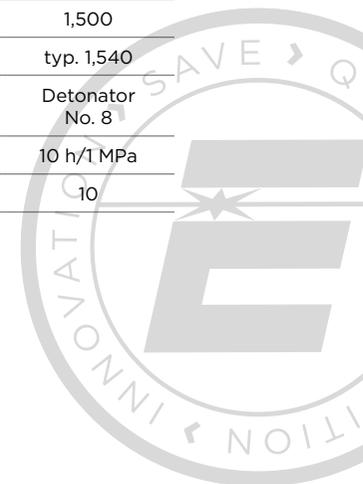
### Classification:

UN 0084, EXPLOSIVE, BLASTING, TYPE D, 1.1 D



Parametr	Unit of measure	SEMTEX® C-4	SEMTEX® PW 4/PE-4
Explosion heat*	kJ/kg	3,780	3,470
Gas volume*	dm <sup>3</sup> /kg	1,090	1,140
Temperature of explosion*	°C	2,800	2,550
Oxygen balance*	% O <sub>2</sub>	- 48	- 55
Content of high explosive	%	RDX 90	RDX 88
Velocity of detonation	m/s	min. 7,600	7 500
		typ. 7,900	typ. 7,750
Brisance according to Hess (2 plate, 50 g)	mm	21	20
Relative working ability	%	77	75
Density	kg/m <sup>3</sup>	min. 1,500	1,500
		typ. 1,560	typ. 1,540
Firing	-	Detonator No. 8	Detonator No. 8
Water resistance	-	10 h/1 MPa	10 h/1 MPa
Shelf life	year	10	10

\* The values determined by calculation



## SEMTEX® 90

SEMTEX® 90 is a plastic explosive for special use on the basis of an inexplusive plasticizer with penthrite and hexogene as active components. The explosive contains a marking substance for pre-explosive detection. It is used primarily for destruction works, underwater blasting works (up to 100m of water column) and special blasting works. The explosive can be split and shaped under the conditions indicated in the instruction manual for its use. Shelf life is 10 years.

### Classification:

UN 0084, EXPLOSIVE, BLASTING, TYPE D, 1.1 D



Parametr	Unit of measure	SEMTEX® 90 P	SEMTEX® 90 PH	SEMTEX® 90 H
Explosion heat*	kJ/kg	4,438	4,319	4,063
Gas volume*	dm <sup>3</sup> /kg	928	965	1,029
Temperature of explosion*	°C	3,139	3,092	2,927
Oxygen balance*	% O <sub>2</sub>	- 33	- 36	- 41
Velocity of detonation	m/s	min. 7,250 typ. 7,400	min. 7,400 typ. 7,650	min. 7,500 typ. 7,750
Brisance according to Hess (2 plate, 50g)	mm	min. 18	min. 18	min. 18
Relative working ability	%	min. 85	min. 85	min. 85
Transmission of detonation	cm	-	-	-
Density	kg/m <sup>3</sup>	min. 1,500 typ. 1,520	min. 1,520 typ. 1,550	min. 1,540 typ. 1,560
Firing	-	detonator no. 8	detonator no. 8	detonator no. 8
Water resistance	-	-	-	-
Smallest permitted diameter	mm	2	4	8
Shelf life	year	10	10	10

\* The values determined by calculation





**BLACK POWDER**





## VESUVIT® TN

CE: 1019-092/V/2004

The VESUVIT® TN black powder is a mixture of potassium nitrate, sulphur and charcoal. This black powder is bulk granulated material of a gray-black colour with a semiglossy surface (graphite).

VESUVIT® TN is used for careful disintegration of unbroken pieces of noble rocks (block mining) or during blasting works in easily disintegrable rocks.

VESUVIT® TN does not resist water and may only be used in a safety fuse under the conditions specified in the corresponding user manual. It is charged into blast holes or joints. An electric detonator, safety fuse or igniter with initiation ability such as standard ignition detonator No. 8 can be used for initiation.

### Classification:

UN0027, BLACK POWDER, granular or as a meal, 1.1 D, ADR



## VESUVIT® THH

CE: 0589.EXP.1692/07

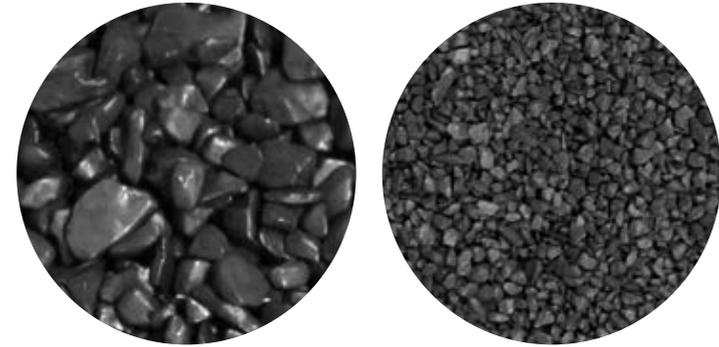
The VESUVIT® THH black powder is a mixture of potassium nitrate, sulphur and charcoal. This black powder

is bulk granulated material of a gray-black colour with semiglossy or matte surface. VESUVIT® THH is used for blasting works, as a primer mixer or rocket fuel.

VESUVIT® THH does not resist water and may only be used in a dry environment under the conditions specified in the corresponding user manual. It is charged into blast holes or joints. An electric detonator, fire cord or igniter with initiation ability such as standard ignition detonator No. 8 can be used for initiation.

### Classification:

UN0027, BLACK POWDER, granular or as a meal, 1.1 D, ADR



Parametr	Unit of measure	VESUVIT® TN	VESUVIT® THH
Explosion heat*	kJ/kg	3,057	3,057
Gas volume*	dm <sup>3</sup> /k	280	280
Temperature of explosion*	°C	2,250	2,250
Temperature of explosion, min.*	°C	185	185
Sensitivity to impact by a hammer (10 kg), min.	J	10	10
Moisture, max.	%	1.0	1.0
Grain size	mm	0.63–2.0	2.24–7.1
Granularity	Rest on sieve 7.10 mm	%	-
	Max. Falling through 2.24 mm	%	-
	Max. Rest on sieve 2.00 mm	%	5.0
	Max. Falling through 0.63 mm	%	5.0
Density	kg/m <sup>3</sup>	min. 1,700	min. 1,700
Shelf life	month	36	12

\* The values determined by calculation

### Packaging

Black powder is usually packaged into 2.5 kg or 25 kg PE packages. Another packaging can be negotiated.





# DETONATING CORDS



## **STARTLINE® 6, 12, 15, 20, 40, 80 and 100**

STARTLINE® 6, 12, 15, 20, 40, 80 and 100 is a type line of classical detonating cord.

The mass of penthrite in grams contained in a running meter of detonating cord of a given type is specified by the number attached behind the STARTLINE® name. STARTLINE® detonating cords are made on modern machines, controlled electronically, which guarantees a perfect continuous column of penthrite along the entire detonating cord length. Fibres of synthetic materials are used for “wraps” that provide high tensile strength to the detonating cords. The surface of the detonating cords is coated with a layer of synthetic material providing resistance to water. These facts ensure extraordinary functional reliability of detonating cords with low grammage.

### Classification:

UN 0065, CORD, DETONATING, FLEXIBLE, 1,1 D, ADR

### Packaging

Plastic coils in cardboard packaging.

PARAMETER	CE	Number of meters on the coil	Number of coils in the cardboard	Total number of meters in the box
<b>STARTLINE® 6</b>	0589.EXP.4103/02	400	2	800
<b>STARTLINE® 12</b>	0589.EXP.4104/02	150	4	600
<b>STARTLINE® 12</b>	0589.EXP.4104/02	250	2	500
<b>STARTLINE® 12</b>	0589.EXP.4104/02	300	2	600
<b>STARTLINE® 15</b>	0589.EXP.4105/02	230	2	460
<b>STARTLINE® 20</b>	0589.EXP.4106/02	160	2	320
<b>STARTLINE® 40</b>	0589.EXP.4107/02	100	2	200
<b>STARTLINE® 80</b>	0589.EXP.4108/02	40	2	80
<b>STARTLINE® 100</b>	0589.EXP.3276/08	35	2	70



Parametr	STARTLINE 6	STARTLINE 12	STARTLINE 15	STARTLINE 20	STARTLINE 40	STARTLINE 80	STARTLINE 100
Colour	red	green	blue	yellow	orange	ultraviolet	red
Content of explosive [g/m]	6.0 ± 1.0	12.0 ± 2.0	15.0 ± 2.0	20.0 ± 2.5	40.0 ± 4.0	80.0 ± 8.0	100.0 ± 10.0
Velocity of detonation [m/s]	6 500	6 500	6 500	6 500	6 500	6 500	6 500
Outside diameter [mm]	min. 3.0	5.0 ± 1.0	5,2 ± 1.0	6.6 ± 1.0	8.7 ± 1.5	11.5± 2.0	13.0± 2.0
Resistance to load [kg]	min. 50	min. 60	min. 60	min. 70	min. 75	min. 75	min. 75





**HIGH EXPLOSIVES - RAW MATERIAL**

## PENTRIT ND

CE: 0589.EXP.1461/04

White crystalline material, it can be used for production of detonators or detonating cord.

**Classification:**

UN 0150, PETN, with not-less than 15% water, by mass, 1.1 D, ADR

Parametr	Unit of measure	Value
Melting point	°C	min. 140
Bulk density	kg/m <sup>3</sup>	min. 750
Chemical stability according to Bergmann-Junk	ml NO/g	max. 2.5
Grain size: on sieve 1 mm	%	0
under 0.2mm	%	max. 12

**Packaging**

The goods is packed in PE-bags per 20 kg dry;  
1 bag put in UN approved cardboard box (20 kg dry, 26.70 kg gross)

## PENTRITOL NP 10 T (PENTOLITE) CE: 0589.EXP.1457/04

It is a mixture of pentrit and TNT, red-pink powder material. It can be used for production of detonators, detonating cord or boosters.

**Classification:**

UN 0151, PENTOLITE, dry or wetted with less than 15% water, by mass, 1.1 D, ADR

Parametr	Unit of measure	Value
Bulk density	kg/m <sup>3</sup>	700-780
Moisture	%	max. 0.1
Grain size: on sieve 1 mm	%	0
Content of fraction 0.2-0.8 mm	%	min. 80

**Packaging:** 20 kg dry; 21.3 kg gross

## PENTRIT NK

CE: 0589.EXP.1453/04

White crystalline material, it can be used for production of plastic explosives.

**Classification:**

UN 0150, PETN, with not-less than 15% water, by mass, 1.1 D, ADR

Parametr	Unit of measure	Value
Melting point	°C	min. 139
Chemical stability according to Bergmann-Junk	ml NO/g	max. 2.5
Grain size: on sieve 1.6 mm	%	0
under 0.2mm	%	max. 75

**Packaging**

The goods is packed in PE-bags per 20 kg dry;  
1 bag put in UN approved cardboard box (20 kg dry, 26.70 kg gross)

## TNR (2,4,6-TRINITRORESORCIN) CE: 1019-091/V/2004

It is yellow-brown to red-brown crystalline material without any smell, it can be used for production of lead trinitroresorcinate.

**Classification:**

UN 0394, TNR, wetted with not-less than 20% water, 1.1 D, ADR

Parametr	Unit of measure	Value
Melting point	°C	min. 174
Moisture	%	min. 20
Insoluble in acetone	%	max. 0.2

**Packaging**

The goods is packed in PE-bags per cca 12.5kg dry; 1 bag put in box





# MIXING AND PUMP TRUCKS



## Mixing and Pump Trucks

The explosive is made directly “above the blast hole” and charging is carried out by the car operators according to the instructions of TVO or the blaster. The opencast explosive of the Emsit® 20 emulsion type is charged by a metering pump by means of the charging hose into the borehole from the bottom.

The mechanized charging of explosives by means of the mixing and pump trucks saves up to approximately 30% of the initial costs on the drilling works after the adaptation of the drilling scheme, which significantly decreases the overall costs for the rock breaking. Other important advantages of this method of work are:

- Speeding up the preparation of the blasting work
- Manpower savings during charging and manipulation in the storehouse
- Savings on the transportation and storage of explosives
- Substantial increase of hygiene and safety at work
- Substantial decrease of physically demanding work





# DRILLING AND BLASTING SERVICES



# Driling and Blasting Services

Explosia a.s. provides comprehensive services to customers in the mining industry. After the 2012 merger, the services are now provided by the FOSPOL Organizational Division within Explosia a.s.

This organizational division of Explosia a.s. has been operating under the name FOSPOL a.s. on the drilling and blasting operations market since 1991, when it first started as a separate private business, and then became an Explosia subsidiary in 2007. At the end of 2012, FOSPOL was merged with the parent company and the FOSPOL Organizational Division was created.

Explosia a.s. is currently one of the leading providers of drilling and blasting operations in the Czech Republic. In 2015 the Company provided disintegration and supplied almost five million tonnes of blast rock at 18 localities all over the Czech Republic.

## Services

The FOSPOL Division is mainly involved in providing services for open-cast mining of rocks, namely drilling, blasting and excavation works during open-cast mining throughout the Czech republic.

Drilling works are provided using our own self-propelled tracked drilling equipment.

FOSPOL provides blasting works on a small as well as large scale almost exclusively with the use of commercial explosives produced by Explosia a.s.

For secondary disintegration, hydraulic smashing hammers on tracked carriers are used.

Loading and collection of blast rock and other materials is executed using machinery for excavation works. To carry out such works, the Company is equipped with modern technology and an adequate number of workers with the corresponding qualifications and extensive experience.

The FOSPOL Division also offers miners a “full service” system for open-cast mines that includes drilling works, blasting operations and secondary disintegration of material with loading into the primary crushing machine in a single continuous technological unit so that the provided service is comprehensive and the mining company can focus its capacity on processing the delivered material on the technological line and on selling their products.

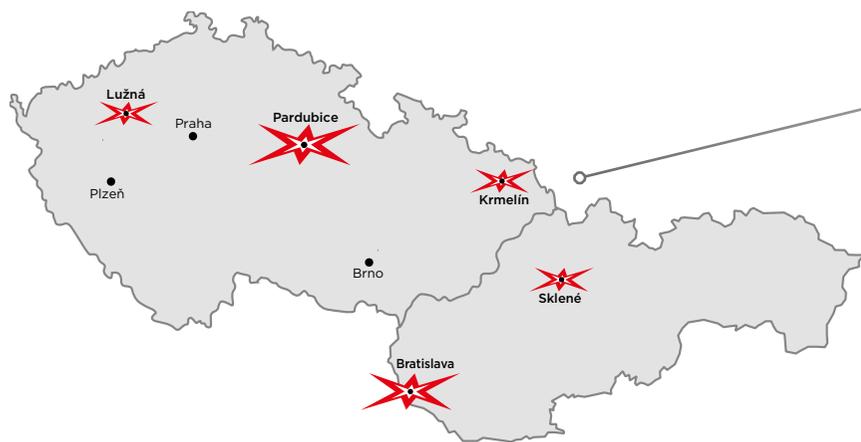


Additional activities include drilling, blasting and excavation works, including related transportation as an independent activity based on once-off orders from other, non-contractual customers.

The activities of Explosia a.s. and FOSPOL division can be summarized in the following points:

- Mining activity and activity carried out in a mining manner
- Machine drilling with a borehole diameter of 90-105 mm
- Blasting works in a small and large extent for the surface mining of rocks, engineering constructions, construction works and destruction
- Rock breaking by means of hydraulic breaking hammers on crawler-mounted vehicles without the use of explosives
- Storage and sale of industrial explosives and detonators
- Transport of industrial explosives, detonators by PHM cars modified according to ADR
- Charging service in the form of complementary service for the consumers of explosives
- Ensuring the measurement of blasting works by the authorised worker





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