SHOOTING RANGE

ACOUSTIC AND BULLET ABSORBING LINING

GELPO
A member of the REC group

RUBBER PANELS ON WALLS AND CEILINGS

ACOUSTIC INSULATION AND BULLET ABSORBING RUBBER PANELS

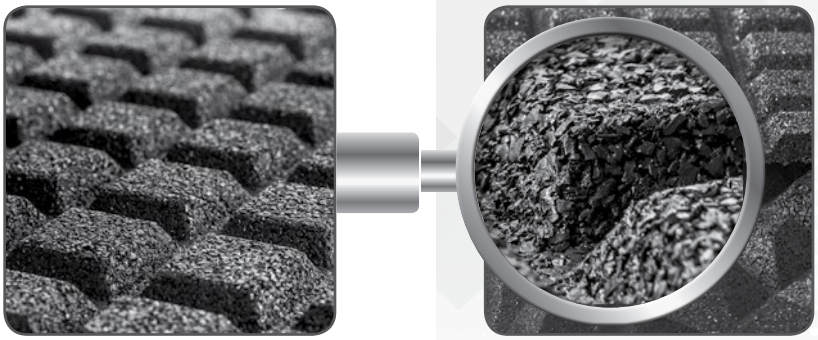
with raster

Basic information

Dimension: 500 x 500 mm
With grid finish 15 mm and 30 mm
Thickness: from 25 mm to 60 mm

Panels are designated to be used as lining of walls, ceilings, shooter´s posts and other shooting range structural elements. Bullet absorbing acoustic insulation panels consists of a base plate and grid finish that is made of rows of truncated pyramids. They have the declared bullet absorbing properties and meet requirements of the standard ČSN 39 54 01 to bullet (non) absorbing lining.
The panels are used as wall lining protection in case of accidental shots where reflected bullets could wound shooting staffs.

structure detail



ACOUSTIC RUBBER PLATES

with foam

Basic information

Dimensions of boards: 500 x 500 mm
Size of the raster: 15 mm, 30 mm
Thickness: from 25 mm to 60 mm

The plates were developed together with an acoustician and subsequently tested and certified for acoustic absorption with excellent results.

The plates are designed for lining walls, ceilings, shooting ranges and other structural elements of shooting ranges.
The acoustic plate consists of a base, a plate and a raster formed by rows of truncated pyramids.

structure detail

BULLET ABSORBING RUBBER PANELS

plain

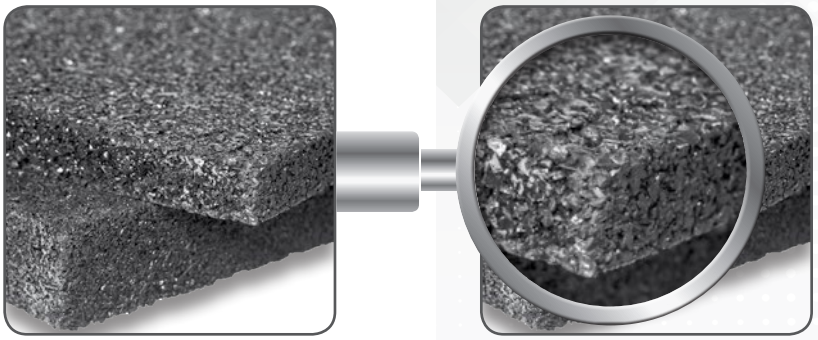
Basic information

Panel dimensions: 500 x 500 mm and 1 000 x 1 000 mm
Thickness: 10 mm, 20 mm, 40 mm
Density: from 650 kg/m^3
up to 1 000 kg/m^3.

Panel dimensions may be customised to individual client´s requirements up to 2 000 x 1 000 mm.

Panels are designated to be used as lining of walls, ceilings and other shooting range structural elements. They have the declared bullet absorbing properties and meet requirements of the standard ČSN 39 54 01 to bullet (non) absorbing lining.

structure detail



RUBBER PAVING ON FLOORS

FLOORS FOR SHOOTING RANGES

To increase the efficiency and comfort of the shooter, we recommend combining anti-reflective (raster or smooth) rubber plates with a rubber floor for shooting ranges.

This is a combination of two different types of products/boards for shooting ranges - the so-called sandwich:

Lower layer

- A relatively soft layer formed by smooth or raster plates that are anti-reflective, which makes movement on this surface very comfortable and in the case of a fall prevents damage to weapons or equipment.

Upper layer

- Very strong and durable layer formed by puzzle boards. The puzzle joints mean the floor barely has any joints and there is no need for any gluing or welding. The floor resists damage from solid footwear or falls from the shooter's equipment.

The thickness and composition of the floor must be determined by the firing regime and the weapons and ammunition used. The total floor thickness can be from 20 mm to 70 mm.

RUBBER PRODUCTS LANDING AREA OF SHOOTING

SHOOTBLOCK

Rubber block for impact site.

Basic information

Dimensions: 500 x 300 x 200 mm
Weight: 25,5 kg

The rubber block can be freely positioned to achieve the required thickness required to stop the projectile (200 mm, 300 mm, 500 mm). The rubber block has excellent stopping effects of bullets, allowing the repositioning of blocks between more or less loaded areas of the impact site. It can be combined with rubber granulate 0 - 50 mm and thus achieve a long life of the impact site.

REQUIRED PROPERTIES OF SHOOTBLOCK 500 X 300 X 200 MM FOR VARIOUS TYPES OF WEAPONS

Type of weapon and ammunition	Thickness of the block side needed to stop the projectile	Number of blocks per m^2
Pistol 9 mm ČZ, type 75, cartridge 9 mm LUGER (9x19), FMJ	200 mm	6,6 pcs/m^2
Revolver 357 Magnum Smith & Wesson, cartridge MAGTECH 357 MAGNUM	300 mm	10 pcs/m^2
Self-loading rifle CZ 858 TACTICAL 4v, cartridge 7.62 x 39	500 mm or 2 x 200 mm	16,6 pcs/m^2 13,3 pcs/ m^2
Self-loading rifle FAL L1A1, FN, cartridge .308WIN	500 mm	16,6 pcs/m^2
Shotgun Two, ZP, calibre 12/70, cartridge 12/70	200 mm (penetration depth 1-2 mm)	6,6 pcs/m^2

RUBBER GRANULATE

Basic information

Dimensions: 0-50 mm
Weight: 1m^3 = 500 kg
Color: multicolored granulate, a specific color composition cannot be guaranteed

Properties:

- excellent stopping effects
- long-term use (high durability)
- anti-noise effects
- possibility of combination with blocks 500 x 300 x 200 mm - smaller depth of impact
- low cost
- small calibres are not reflected back from the granulate to the shooter
- option of covering the sand wall – preventing dustiness
- quick and simple separation of missiles

PROPERTIES OF RUBBER GRANULATE 0-50 MM (projectile range)

Type of weapon and ammunition	The thickness of the granulate layer required to stop the projectile	Weight of the granulate layer per m2
Pistol 9 mm CZ vz.75, cartridge 9 mm LUGER (9x19), FMJ	29 cm	145 kg/m^2
Revolver 357 Magnum Smith & Wesson, cartridge MAGTECH 357 MAGNUM	34 cm	170 kg/m^2
Self-loading rifle CZ 858 TACTICAL 4v, cartridge 7.62 x 39	45 cm	225 kg/m^2
Rifle self-loading FAL L1A1, FN, cartridge 308WIN	65 cm	325 kg/m^2

SAFETY AND NOISE ATTENUATION

Given their properties, rubber panels in shooting ranges are specially designed primarily as wall, floor bullet absorption lining and for other structural elements of indoor (tunnel) and outdoor shooting ranges for hand fire weapons pursuant to the standard ČSN 39 54 01. They attenuate and significantly lower the shooting range shooting noise level. This way they secure the required safety of shooters and, last but not least, they contribute to the protection of systems and structural elements of the shooting range against being damaged by shots.

in cooperation with ammunition, explosive and speciliased ballistics experts. We can deliver not only specific rubber panels including installation, we can provide shooting range consulting services, propose solutions and completely design your facilities including preparation of documentation.

Our offer includes solutions for civil, sport, open air, roofer, container, tunnel shooting ranges for both army and police armed forces. The panels are manufactured of SBR rubber. The standard colour is black, if so required by the client, the material binder may be coloured or the panels may be colour-sprayed in a wide colour shade scale. They are used for various applications. In principle, we use panels of the following dimensions: 500 x 500 mm and thickness starting from 20 mm to 100 mm. We propose specific panels for shooting ranges (type, height and structure) depending on weapons, ammunition to be used and the type of shooting range. The design of military and special shooting range is customised using mixture of materials that minimise reflected bullets and possible resulting injuries.

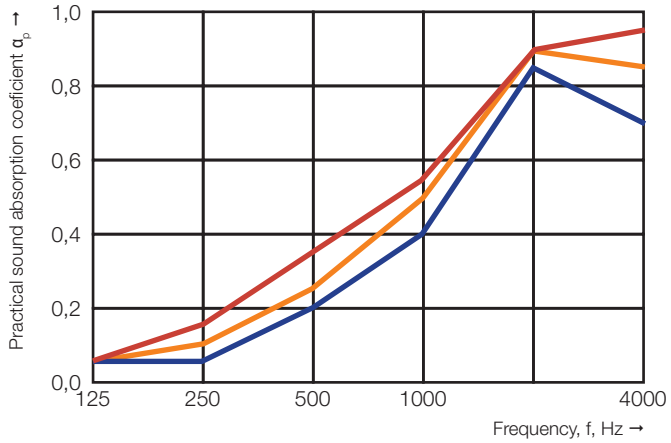
Each client has his specific requirements. Let us know, we will help you to find the best customised solution.

ACOUSTIC MEASUREMENT OF RUBBER TILES

The spectral range of sound of common calibres of long and short weapons is in the range of 150 to 2,500 Hz, the peak usually being in the mid-frequency range of 900 to 1,500 Hz. The results of acoustic measurements are therefore important at these frequencies. Sound absorbing tiling on the shooting range should therefore be primarily effective in the range of 900 to 1,500 Hz, which when evaluated according to ČSN EN ISO 11654: 1998 corresponds to the octave bands of 1,000 Hz and 2,000 Hz.

GELPO s.r.o. products they reach the following values in this area:

Product	α_p 1,000 Hz	α_p 2,000 Hz
Rubber plate 500 x 500 x 30 mm with raster 15 mm (composition 100 % SBR granulate with density about 750 kg/m^3)	0,40	0,85
Rubber plate with foam 500 x 500 x 30 mm with raster 15 mm (composition 50 % SBR granulate and 50 % foam. Density about 550 kg/m^3)	0,50	0,90
Rubber plate with foam 500 x 500 x 45 mm with raster 30 mm (composition 50 % SBR granulate and 50 % foam. Density about 550 kg/m^3)	0,55	0,90



The average value is 0.68 α_p.

By using the result of 0.68 α_p as an example, it can be interpreted as the fact that 68 % of the incident sound is absorbed. Only 32 % of the sound is reflected back, which is rated on the scale as very absorbent material. For comparison: an ordinary wall or ceiling without treatment has an absorption of less than 0.1 α_p (absorbs less than 10 % of the incident sound), more than 90% of the sound is reflected. An ordinary wall/ceiling is considered to be an acoustically reflective surface.

REFERENCE

Kill house – training house for Czech police anti-terrorist unit

Complete solution and design

Slovak army training centre

Training centre shooting range: vehicle hall, infantry shooting range, train, concrete panel house

Kazakhstan – Almaty military shooting range – ONON unit and Military Academy training centre

Delivery of rubber panels and construction consulting

Municipal Police Prague – weapon discharging point design at all police service stations

Design and delivery of rubber panels

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ISO 9001
LL-C (Certification)

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