By the intended guidance of the shockwaves produced during the impact, the amount of explosive material can be basically reduced; the dangerous PENT nowadays often used can furthermore be avoided. The different run times of opposing shockwaves are in the range of milliseconds so that as a result of the inertia of the explosive agent an extremely high densification and thereby a safe initiation directly follows. The amount of explosive agent can be reduced significantly according to the object of the invention, as reproducible shooting trials at different targets with a multipurpose projectile of caliber 0.5 showed, the same without blind shells, deflagrations or flashfires.

In one embodiment, according to claim 1, there is provided a full jacket safety projectile with a central penetration core centered in the full jacket with a front-sided, blind hole-like recess being filled with an explosive agent, wherein the penetration core having at least one first and one second wedge-shaped constriction, wherein on impact on a target the resulting central shockwave acting front-sided on the explosive agent and the recess in the penetration core splinters inside the target, characterized in that at circumferential notches and/or wedge-shaped constrictions shockwaves are reflected at the full jacket and/or in the penetration core and that the same are impinging the explosive agent, by opposingly directed shockwaves, so that compressions counteracting to each other are evolving, which are directly initiating the explosive agent.

Advantageous developments of the subject matter of the invention are described in the dependent claims.

According to claim 2, a simple guidance of shockwaves takes place by circumferential notches at the full jacket.
Constrictions with front-sided faces at the penetration core are particularly efficient for the effective reflection of shockwaves according to claim 3.

In a preferred embodiment of the invention, a front-sided face, that means the face causing and aligning the reflection of the shockwaves towards the recess 5, formed as upper wedge face particularly of a wedge-shaped first and/or second constriction. Preferably, the upper wedge face is formed flat, even and conical-shaped particularly regarding opposing the axial direction (F) (shooting direction). Alternatively, the upper wedge face can be formed at least partly, preferably fully, convex, preferably parabolic-shaped (viewed from the outer side of the penetration core) in order to focus the shockwaves to the explosive material at the recess. Preferably, also the other lower face of the wedge-shaped constriction can either be formed flat, even or convex, particularly parabolic-shaped in addition. The alignment of the front-sided faces at the penetration core takes place in the simplest manner, in that the alignment is determined geometrically by a central line

leading to the target point. This target point is the previously determined point, where a shockwave introduction is most efficient; claim 5.

Rear-sided cone faces with a cone angle according to claim 6 have proven themselves, wherein its geometric tips comply with the previously mentioned target point.

The double function of the first wedge-shaped constriction referred to in claim 7 is very space-saving and has been found to be extremely effective.

A good penetration into the target is achieved by a hardened steel tip, which is increased by the introduction of a titanium pin of a kind of a pilot drilling. This hard pin effectuates a high contact pressure at the target so that barely any ricochets take place; claim 8.

The embodiment according to claim 9 results in a highly-effective, continuously burning marking charge and is therefore employed as tracer.

The pyrotechnical mixture according to claim 10 results in a good target marking as it is desired particularly for multipurpose projectiles.

In a preferred embodiment of the invention, the front part of the penetration core, particularly a cup part with a front-sided, blind-hole-shaped recess for filling with explosive material, and a central part of the penetration core is manufactured, particularly turned, in one piece, particularly a metal piece. Preferably, the metal piece is formed of simple steel, without comprising a particular magnesium cobalt additive. The central and rear part of the penetration core is delimited from the front part by a first constriction in the axial direction.

In a further development of the invention, a rear-sided final front face of the penetration core has a plane or even face or alternatively a convex, preferably parabolic-shaped shape for reflecting and aligning, preferably for focusing, shockwaves essentially in the axial direction through the penetration core towards the recess in the front part.

The use claims 13 to 17 show an enormously wide range of application of the subject matter of the invention.

Practical trials, in comparison with analogous projectiles have shown that the amount of explosive agents can be reduced to about a third.

Generally, the subject matter of the invention is not limited to police or military applications: In machine construction, mining, civil engineering, but also during the exploration of raw materials, penetrations and drills are permanently necessary, which have to be executed only with minimal use of explosives for security and environmental reasons. The use claims 13 to 17 outline these applications but are by no means exclusive.