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Rheinmetall mortar systems and ammunition: effective indirect fire support for the infantry

Experience gained in military operations worldwide shows that infantry units, special operations forces and other troops that fight on foot require a highly effective organic indirect fire capability, even when taking part in combined operations. As a partner of the men with “boots on the ground”, Rheinmetall supplies mortar systems, ammunition and fire control units. At Eurosatory 2014 in Paris Rheinmetall is emphasizing its role as a “one-stop shop” for mortar systems.

Light, compact, quiet and with a low signature, one such indirect fire system is Rheinmetall’s Fly-K mortar system. The French armed forces have used the Fly-K with excellent results in Afghanistan. A wide array of cartridges – ranging from practice rounds to service ammunition with a range of up to 800 metres – delivers outstanding firepower. Owing to its propelling system, the mortar system can fire multiple rounds in rapid succession with negligible heat generation and an extremely low firing signature (60 dB). When fired, it basically makes no more noise than popping a champagne cork. In addition, Rheinmetall has developed an easy-to-mount digital aiming device for the Fly-K. It measures the incline and elevation angle of the barrel before showing the range of the mortar shell on a display.

Rheinmetall’s family of 60mm mortar ammunition encompasses service and practice ammunition, including insensitive high explosive (IHE), high explosive (HE), RP smoke/obscurant (multispectral), and illumination rounds (visible and infrared). The IHE ammunition is optimized for insensitivity, meeting or exceeding all STANAG 4439 criteria. In terms of effectiveness, the Group’s optimized IHE-pre-formed-fragments (PFF) 60mm ammunition is comparable to 81mm ammunition – even though weapon and ammunition both weigh less.

The new 60mm ammunition lends itself especially well to commando-type mortars with barrel lengths of 640 up to 1400 millimetres. It can also be fired from long-range systems such as the M6 launcher made by Denel Land Systems of South Africa. When fired from an 895-millimetre-long barrel, the maximum effective range is approximately 4,000 metres. Furthermore, the new 60mm mortar family is compatible with all standard weapon systems in this calibre featuring a maximum operating pressure of at least 73MPa.

In all variants, the propelling charge is identical and, depending on customer requirements, can contain either EI® or ECL® powder (still under development) from Rheinmetall Nitrochemie in a combustible case. Loading systems and ballistic tables can likewise be modified to meet customer requirements. The obturation characteristics of the mortar shells contribute to a longer maximum effective range.

Needless to say, Rheinmetall also continues to supply a full family of ammunition for the widely used 81mm mortar. These rounds exceed the insensitive munitions criteria contained in NATO STANAG 4170. The non-toxic RP smoke/obscurant offers reliable protection from detection in the visible and IR spectrum. The IR illumination rounds reliably light up the battlefield in the IR spectrum, while producing only a negligible visible light signature (500 – 1800 cd).

Featuring a newly developed propelling system, Rheinmetall's innovative family of 120mm mortar ammunition combines effectiveness with compelling precision. Optimized for engagement of semi-hard targets, the HE shells feature improved fragmentation characteristics and, when fitted with the right fuse, are able to punch through reinforced concrete as defined in NATO STANAG 4536. The insensitive explosive charge exceeds the full range of requirements contained in NATO STANAG 4170.

The RP smoke/obscurant shells contain four smoke/obscurant pods whose design corresponds to the already fielded DM1560 components of the DM125, Rheinmetall's 155mm smoke/obscurant projectile. Once again, the smoke/obscurant is non-toxic and provides reliable protection in both the visible and IR spectrum.

The IR illumination shells reliably illuminate the battlefield in the IR spectrum from 0.7 μm to 1.2 μm . Producing only a minimal signature in the visible spectrum, illumination persists for 45 seconds, with a standard descent velocity.

The propelling system, featuring powder based on Rheinmetall's patented EI technology, displays very good temperature stability, energy exploitation, storability and system compatibility.

Modern Rheinmetall fire control units such as the VingPos – specially developed for mortars – substantially enhance the precision and thus the combat effectiveness of these weapons. The compact VingPos aiming device fits into a small backpack. It makes it easier for the crew to determine their own position and the direction of fire, and to align the mortar accordingly. VingPos is compatible with all standard mortar systems.

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