

## 14001 - Enhancing range and lethality – 40mm Medium Velocity Ammunition and Weapons

A 2008 US Special Operations Command (USSOCOM) requirement for enhanced range and lethality lead Rheinmetall to the development of a new family of ammunition named 40mm Medium Velocity. Rheinmetall's solution transfers battle proven characteristics and technologies from our family of 40mm High Velocity ammunition to these new munitions and shoulder fired weapons. The Rheinmetall 40mm MV family consists of two basic types:

- 40mm MV Target Practice (TP) ammunition
- 40mm MV High Explosive (HE) and High Explosive Dual Purpose (HEDP) ammunition, Rheinmetall's 40mm MV TP Cartridge is the perfect training ammunition, reaching out to distances of up to 700m. It uses a pressure optimized MV propulsion unit – the same one used in the entire 40mm MV family – and features a tactile feature that prevents chambering of the cartridge in incompatible low-velocity (LV) launchers. The projectiles used in the Rheinmetall MV family are derivatives of the projectiles used in our MK 281 40mm x 53 training ammunition, now in service with the US Marine Corps, the US Army, USSOCOM and the US Air Force. This projectile design provides a day and night training capability through its use of multiple marking payloads, as well as the ability to accept an optional tracer element.

Rheinmetall is one of the world's leading fuze experts, with fuze facilities in both Switzerland (RWM Zaugg) and South Africa (RWM Laingsdale). These two nations have long been global leaders in fuze technology, and with their, help, Rheinmetall has developed the completely new VELAN family of fuzes for use with the 40mm MV family of cartridges. The VELAN fuze is manufactured completely in-house by Rheinmetall and comes in both PD and ABM versions.

The 40mm MV HE-HEDP PD grenade is ideal for engaging and defeating lightly armored vehicles and other "soft skinned" targets at ranges of up to 700m. The HE version of this round has been specially optimized for fragmentation and anti-personnel effects, and emits more than 1400 fragments when functioned. The HEDP round, even with its large shaped charge capable of penetrating 85mm of RHA, still emits more than 1000 fragments when functioned. This makes for a large lethal radius of 10m (33 ft) for both cartridge types. Either version of this cartridge is ideal for use with grenade launchers that are not equipped with a fire control system or programmer. The VELAN PD fuze used in this cartridge has an extremely low dud rate thanks to its dual mechanical and electrical initiation mechanisms. The warheads for all Rheinmetall 40mm MV HE and HEDP cartridges contain only IM-compliant energetic materials exclusively.

The 40mm MV HE/HEDP ABM cartridge, while also excellent at engaging and defeating lightly armored vehicles, is really designed to effectively engage and defeat targets in defilade or hiding behind walls or windows. The Rheinmetall 40mm MV ABM has a unique airburst fuze system, the VELAN ABM fuze, that is programmed by an infrared (IR) beam. This new fuze programming system was developed by Rheinmetall and is easily adaptable to any weapon or fire control unit (FCU). The VELAN ABM IR fuze programmer can be easily integrated with most FCUs; the only data required from the FCU is the range to the target; that data can be sent to the VELAN IR programmer via a small connecting cable. The data signal between FCU and programmer, as well as the IR signal to the fired grenade itself, is perfectly secure and cannot be manipulated or intercepted, and is also not subject to disruption caused by external electrical signals, such as jamming, interference or noise. In addition to the above munition products, Rheinmetall has developed two new launching systems for use with both 40mm MV and low-velocity ammunition. Cerberus Grenade Launcher The Cerberus grenade launcher (GL) is a new and innovative stand-alone and under slung grenade launching system. Equipped with a unique and patented hydraulic mitigation system, Cerberus GL reduces the gas pressure force by up to 20% and allows for 40mm MV to be fired with the felt recoil of unmitigated 40mm LV. Using a high precision barrel it is possible to benefit completely from the high precision of our ammunition. GL Cerberus is compatible with the current STANAG-rail and 40mm ABM-ammo ready. It fires all 40mm Medium Velocity rounds staying downwards compatible with all 40mm LV and pyro.

Hydra Automatic Grenade Launcher The Hydra AGL is the world's first box-magazine fed 40mm grenade launcher. Hydra has an empty weight of 4 kg, and can accept magazines of 4, 6, 8 or 10 round capacity. The self-regulating bolt design permits the use of all 40mm x 46 LV and MV rounds up to 110mm length in the self-loading mode. The trigger permits semi or three round burst fire as standard, with the option of a fully automatic mode. The high precision steel barrel is surrounded by STANAG-rails. Of course, Hydra is compatible with Rheinmetall's ABM cartridges, through the addition of an FCU and an IR programmer on the accessory rails.