



## 9K51M Tornado-G MLRS Gets New Two-Stage Munition

**OE Watch Commentary:** The accompanying excerpted article from *Izvestiya* discusses a new munition for the 9K51M. The 9K51M Tornado-G multiple launch rocket system (MLRS) was officially accepted into service in 2014 as a replacement for the ubiquitous BM-21 Grad found in Russian 122mm MLRS battalions, and is intended to completely replace the BM-21 by the end of the decade. Although the Tornado-G is similar in outward appearance to the BM-21, it has a greatly improved fire control system with satellite navigation (for the computation of firing solutions) and ability to automatically load location data from reconnaissance assets and higher headquarters.

These capabilities, in addition to a new generation of munitions as outlined in the excerpt, significantly improve the accuracy, speed, and range of the 9K51M Tornado-G over its predecessor. This munition is reportedly a two-stage rocket with detaching warheads, which are stabilized by parachutes, that can descend vertically upon a target, and are suitable for destroying armor, personnel, and field fortifications. **End OE Watch Commentary (Bartles)**



2B17M combat vehicle of 9K51M Tornado-G MLRS.

Source: Vitaly Kuzmin, <https://photos.smugmug.com/Military/5th-Anniversary-of-Park-Patriot/i-F9bH7SV/0/9a8f1ce0/X2/5letPatriot-49-X2.jpg>, CC BY 4.0

***“The new munitions mean that a single launcher can fire a salvo at several targets at once, and that several launchers can concentrate their fire on a single target. This is why a two-stage design is being used in place of the traditional single stage. Not only that but the rocket warheads detach, which makes it impossible for air defense systems to intercept them. Targets can now be hit even if they are under cover and on the reverse side of higher ground.”***

**Source:** “Добить залпом: в войска поступили новые ракеты для «Торнадо-Г» (Finish Them off With a Salvo: Troops Take Delivery of New Rockets for the ‘Tornado-G’),” *Izvestiya Online*, 30 September 2020. <https://iz.ru/1067114/anton-lavrov-roman-kretcul/dobit-zalpom-v-voiska-postupili-novye-rakety-dlia-tornado-g>

*A new design of precision rocket has been developed for the Tornado-G launcher. It has already been tested and accepted for service and is being delivered to the troops, sources in the military told Izvestiya...*

*The new munitions mean that a single launcher can fire a salvo at several targets at once, and that several launchers can concentrate their fire on a single target. This is why a two-stage design is being used in place of the traditional single stage. Not only that but the rocket warheads detach, which makes it impossible for air defense systems to intercept them. Targets can now be hit even if they are under cover and on the reverse side of higher ground -- something that was beyond the ability of ordinary Grad systems. Izvestiya reported earlier, 300-mm rockets from the Tornado-S heavy multiple launch system, which is currently replacing the renowned Smerch, also have this capability. The Defense Ministry announced earlier that the new Tornado-G rockets with detaching warheads had been used for the first time, during the Kavkaz-2020 exercise. According to the military, they descend onto their target in practically vertical attitude on stabilizing parachutes, which ensures a high degree of destruction of targets under cover.*

*Rocket artillery routed a notional adversary's armor during one of the episodes of the Kavkaz exercise, which played out at the Prudboy training ground near Volgograd. This stage involved more than 20 Tornado-G multiple rocket launchers, and the result was the destruction of more than 15 armored targets.*

*The advantage of multiple launch systems over conventional artillery is that they engage targets in waves, Izvestiya was told by Colonel General Anatoliy Sitnov, a former Deputy Defense Minister for armaments. “During conventional artillery fire you have 40 seconds to run and take cover. But this is virtually impossible when under fire from rocket launchers, because they are letting off rounds less than one second apart,” he explained. “Also, when multiple launch systems are being used they create a seismic wave, which wrecks dugouts and other cover.”*

*General Sitnov emphasized that the emergence of modern rocket systems and high-tech rounds for them is the result of decades of nonstop development. Fundamental research and design and development work never ceased and the scientific institutes and design bureaus managed to retain their human resources even during the most financially challenging of times...*