

CENJOWS

RUSSIAN HYPERSONIC WEAPONS

The Kh-47M2 Kinzhal (Dagger), the Avangard hypersonic glide vehicle (HGV), and the 3M22 Zircon anti-ship hypersonic missile were unveiled by Russian President Putin during his annual state-of-the-nation address on 1 March 2018. Putin explained at the time that it was the US' unilateral withdrawal from the ABM Treaty in 2002 that forced Russia to start developing hypersonic weapons.

Kh-47M2 "Kinzhal" at a Glance

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| <p>ORIGINATED FROM Russia</p> <p>CLASS Air Launched Ballistic Missile (ALBM)</p> <p>BASING Modified MiG 31 Fighter</p> <p>DIAMETER 1.0 m</p> <p>PAYLOAD 480 kg</p> <p>STATUS Operational</p> | <p>POSSESSED BY Russia</p> <p>ALTERNATE NAME KH-47 M2 Kinzhal (Trans: Dagger)</p> <p>LENGTH 8.0 m</p> <p>WARHEAD Nuclear or Conventional</p> <p>RANGE 1500 - 2000 km</p> <p>IN SERVICE 2017 – PRESENT</p> |
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Kinzhal Development.

It is likely derived from Russia's ground-launched 9K720 Iskander-M short-range ballistic missile. The benefits of creating an air-launch variant include greater range, deployability, and flexibility over ground-based Iskander missiles. Additionally, the animated Kinzhal in Putin's March 2018 speech

was shown targeting naval vessels, so it may also have (or plan to develop) anti-ship capabilities.

Russia likely developed the unique missile to more easily target critical European infrastructure (e.g. airfields, warehouses, command centers, etc.) and to counter U.S. theater missile defenses such as [THAAD](#). An aircraft's ability to launch from unpredictable directions would strain sectored (non-360 degree) radars, such as those currently deployed with the Patriot system. Additionally, if the Kinzhal does indeed have anti-ship capabilities, it may also pose a threat to U.S. and NATO aircraft carriers.

Specifications

The Kinzhal has a reported range of 1,500-2,000 km while carrying a nuclear or conventional payload of 480 kg. A July 2018 TASS news report suggested the missile's range would exceed 3,000 km if outfitted on the Tupolev Tu-22M3 bomber. The Kinzhal has a length of 8 m, a body diameter of 1 m, and a launch weight of approximately 4,300 kg.

Following the launch, the Kinzhal rapidly accelerates to Mach 4 (4,900 km/h), and may reach speeds of up to Mach 10 (12,350 km/hr). This speed, in combination with the missile's erratic flight trajectory and high maneuverability, could complicate interception.

It is worth noting that Russia's designation of the Kinzhal as a "hypersonic" missile is somewhat misleading, as nearly all ballistic missiles reach hypersonic speeds (i.e. above Mach 5) at some point during their flight.

It is so fast, in fact, that "the air pressure in front of the weapon forms a plasma cloud as it moves, absorbing radio waves," the weapons experts at US website Military.com explain. That makes "Kinzhal" and other hypersonic weapons very hard to catch on radar systems, an effect compounded by their low altitude.

Service History

The missile reportedly entered a trial period at airfields in southern Russia in December 2017. On March 11, Russian media released footage of a reported Kinzhal test fire, which showed the missile equipped to a modified MiG-31 fighter. The video does not show the resulting strike, but Russia's Ministry of Defense announced a success: "The launch was normal; the hypersonic missile hit the preset target on the test site." Russian reports indicate that the missile has entered service, and reports in 2018 indicated that six MiG-31s have been modified to carry the missiles and are based in Akhtubinsk in southwest Russia, about 150 km east of Volgograd.

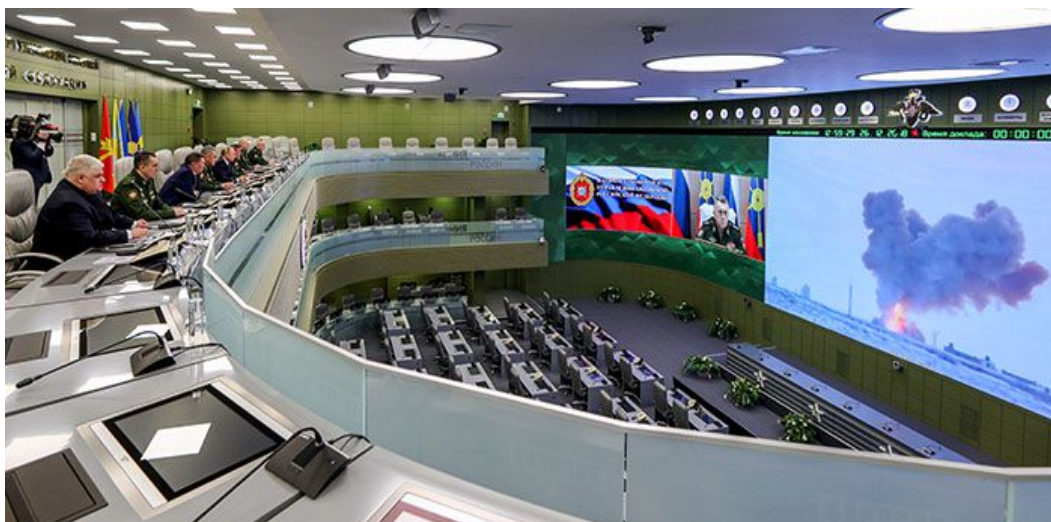
On March 19, 2022, the Russian Ministry of Defense claimed it had fired a Kinzhal missile at a munitions depot around the town of Deliatyn in southwestern Ukraine. This marks the first known use of the weapon in combat. The United States was able to track the missile “in real-time” during its flight, according to CNN citing U.S. government officials.

<https://missilethreat.csis.org/missile/kinzhal>

Avangard HGV

The Russian Avangard HGV is designed to be launched atop an intercontinental ballistic missile and fly 27 times the speed of sound (33,000 km/h or 20,500 mph) carrying a nuclear payload of up to two megatons. To withstand the high temperatures resulting from its hypersonic flight, the weapon is made of innovative composite materials. Furthermore, unlike a regular missile warhead, the Russian-made HGV is capable of performing sharp manoeuvres en route to the target, making it much harder to intercept.

It was earlier reported that the Avangard can be carried by the UR-100UTTKh or the RS-28 Sarmat liquid-fuelled intercontinental ballistic missiles (ICBMs). The latter, dubbed by NATO as the SS-X-29 Satan 2, is believed to be the biggest weapon in Russia's nuclear arsenal. From a Base in the Ural Mountains on 26 December 2018, Russia's armed forces launched a ballistic missile carrying an HGV called Avangard. After separating from its carrier in the stratosphere, the HGV zigzagged 6000 kilometers across Siberia at a searing Mach 27, Russian officials claimed, then smashed into a target on the Kamchatka Peninsula. Afterward, a beaming Russian President Vladimir Putin called Avangard “the perfect New Year's gift for the country.” The Avangard hypersonic missiles entered service on 27 December 2019, according to the Russian Ministry of Defence.



Russia's Avangard is launched aboard a rocket in a 2018 test. Spectators include Russian President Vladimir Putin, who has declared the hypersonic weapon is now in service.

3M22 Zircon

Russia is continuing to test its 3M22 Zircon anti-ship hypersonic cruise missiles, which are able to destroy both sea-going and land-based targets. According to the weapon's specifications, first revealed by Vladimir Putin on 20 February 2019, this hypersonic missile is capable of accelerating to about Mach 9 (10,734 km/h or 6,905 mph). The weapon's maximum firing range could reportedly exceed 1,000 kilometres (620 miles).

On 6 October 2020, Russia successfully test-launched the 3M22 Zircon from the Admiral Gorshkov frigate in the White Sea, in the north of Russia. Zircon trials on an underwater carrier were scheduled to start in June 2021, while serial production is expected to begin in 2022. It was earlier reported that the hypersonic cruise missiles would be installed on Project 885M Yasen-M nuclear submarines, Russia's new super-quiet multi-purpose underwater craft. It is believed that the Zircon missile can sink even the most advanced American aircraft carriers, and according to experts, it could easily defeat the US' Aegis Combat System.



<https://www.globalsecurity.org/wmd/library/news/russia/2021/russia-210629-sputnik01.htm#>