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Meta Description: What makes the S500 missile system different from the S400 ? Read to find out more. For more government exams preparation 2022 follow BYJU'S

S 500 Missile System

In March 2022, the Russian Ambassador in India, Denis Alipov, announced to the Russian Media that the Russian government is open to selling its newest missile systems - the S500 to India should the latter express interest.

In the context of the Russian-Ukrainian conflict, this does come as a serious development. Just what is the S500 missile system and how is it related (or different) to its counterpart the S400?

What is the S500 missile system?

Also known as the 55R6m "Triumfator-M", the S-500 Prometey ('Prometheus' in Russian) is a surface-to-air/anti-ballistic missile system designed and developed by the Almaz-Antey Air Defence Concern. It has been specifically created by the Russian firm to replace the A-13 missile system currently in use and to supplement the S-400.

The S-500s will work in tandem with the S-400s, with the first units being deployed around Moscow and Central Russia. There will also be a naval version of the S500 which will be the likely armament of the Lider-class destroyer.

The S-500 regiment appeared first on combat duty in Moscow on 13 October 2021.

Design of the S500 Missile System

The S-500 primary design function is to intercept and destroy intercontinental ballistic missiles in mid-air. It is also designed to intercept hypersonic cruise missiles and aircraft for air defence and Airborne Early Warning and Control (AWACS) aircraft.

Some other design facts for the S500 are as follows:

- The planned range of the anti-ballistic is expected to be between 500 and 600 km

- The anti-ballistic missile would be able to detect and simultaneously engage 10 hypersonic targets at a speed of 5 kilometres per seconds
- It is designed to destroy hypersonic cruise missiles and other airborne targets at speeds of higher than Mach 5
- The S500 can target aircrafts at altitudes of 180-200 km
- It is effective against ballistic missiles with a launch range of 3,500 km; the radar reaches a radius of 3,000 km.
- It is also capable of targeting unmanned aerial vehicles, satellites in low orbits and even space weapons launched from high orbit.
- The S500 will have rapid deployment capability through its mobile system.
- Its response time is at 4 seconds or less as compared to S-400 whose response time is at 10 seconds.

The components of the S500 are as follows:

- 77P6 launch vehicle, based on the BAZ-69096 10x10 truck
- 55K6MA and 85Zh6-2 command posts, based on BAZ-69092-12 6x6
- 91N6A(M) acquisition and battle management radar, a modification of the 91N6 (Big Bird) towed by the BAZ-6403.01 8x8 tractor
- 96L6-TsP acquisition radar, an upgraded version of the 96L6 (Cheese Board) on BAZ-69096 10x10
- 76T6 multimode engagement radar on BAZ-6909-022 8x8
- 77T6 ABM engagement radar on BAZ-69096 10x10

Overview about Missile Defense systems

Missile Defence Systems are a form of missile defence systems which are designed to protect a country from other missiles or from other airborne targets. Generally, missile defense systems are specifically designed to target very fast and very specific threats.

India has also developed its own set of missile systems which was introduced in light of the ballistic missile threats from Pakistan.

The Ballistic Missile Defense system of India consists of two interceptor missiles, namely the Prithvi Air Defence (PAD) missile for high-altitude interception, and the Advanced Air Defence (AAD) Missile for lower altitude interception, which was developed by the Defence Research and Development Organisation (DRDO). To complement these defence systems India bought S-400s from Russia.

Frequently Asked Questions about S500

What is the difference between S400 and S500?

The S500 has an operational range of 400 kms. While the S-500 is a much more sophisticated version that can target ballistic missiles from 600 km away compared to just 60km by the S-400. The S-500 can target hypersonic missiles and this gives it an edge over the S-400.

Can the S500 stop a hypersonic missile?

The S-500 is designed for intercepting and destroying intercontinental ballistic missiles, as well as hypersonic cruise missiles and aircraft, for air defense against Airborne Early Warning and Control and for jamming aircraft.

Is the S500 capable of detecting aircraft designed to avoid radars?

Since the S500 is a very new missile defence system. Hence very little technical information is available. However, its main role is for airborne target acquisition and tracking. This may well have the ability to identify and track aircraft with low radar cross-sections.