

Sutafaia Fusion Shell

USE ONLY IN RAIL OR COIL WEAPONS!

The "Sutafaia"¹⁾ or "Star Fire" shell is a reliable, inexpensive thermonuclear tipped railgun shell. These are the result of three weeks of dedicated research and experimentation, and are slated for live deployment mid YE 40.

Current known manufacture is only in Section 6 prototyping labs ca YE 39. They were designed as an experiment into fusion weaponry when Section Leader Jack Pine introduced the Wolverine Variable Tank, and it was found that the tank's "all purpose" design failed to deliver high power with its multirole design. The shell was designed by research teams with the intent to pack as much yield into an explosive shell as possible. Eventually, thermonuclear reactions were proposed.

The shells are made of two part cast gadolinium, one conical piston driver and an overcast containing vessel, with stabilizing fins behind. These are filled with liquid elemental deuterium before sealing and being allowed to come up to room temperature.

When fired from the any rail or coil gun, most commonly a 50mm light rail cannon on the [Hydra Variable Tank](#), the electromagnetic fields of the four rails strip electrons away from the near-critical deuterium core, resulting in a high energy presseurized plasma²⁾. Upon impact with the target, the conical piston compresses this plasma further before the containment vessel can rupture, resulting in a total fusion event. This yields a thermonuclear detonation. Unfortunately, muzzle velocity must be kept relatively low to avoid premature deformation of the round or overpenetration, both of which would make the Sutafaia shell unpredictable and dangerous to use.

The camera was shaky, obviously held by someone with little or no experience as a vested woman held up a large sabot round with the distinctive tail hook of a railgun shell. Her green eyes flashed as she swept her brown hair back, several screens behind her flaring to life. They showed basic composition of the round alongside the image of a cannon prepping for a live test.

"The starfire shell is one of the more simple designs coming from Section Six's research and development teams. It is a hypersonic railgun round with a potent explosive secondary feature. Let's cut now to the live fire test."

The camera cut away, and focused in on the cannon, before panning across to a derelict starship hull further down the line. Several technicians stood around it, typing on the computers to gather the information needed for further deployment.

"Target acquired. Range six kilometers."

"Muzzle velocity set. Eight kilometers per second."

"Fifty millimeter shell loaded. Starfire live fire demonstration test is go."

"Firing in three." Another technician passed a control stick to a black haired woman with blue eyes.

"Two." The air seemed to tense as charges built. "One."

A loud boom filled the microphone, followed by a blinding flash from the target. The heat threw a mushroom cloud of debris and a shockwave blew lab coats and hair about. When the dust cleared, the hull was simply gone.

"Test complete. Target eliminated."

"Yield estimate... One point seven five kiloton."

The green eyed woman came back onto the screen. "The Starfire shell is a potent weapon, used for mining of resources and for the defense of our home. The results speak for themselves. May it bring peace to your home, by any means necessary."

Stats

- Damage Rating: [tier 9](#): ³⁾ ⁴⁾
- Shell Size: 45×70 mm discarding sabot.
- Caliber: This article covers 50mm. ⁵⁾
- Damage Description: Directed thermonuclear blast
- Effective Range: 18 miles (~30 km) before internal plasma deionizes and returns to stable, non-nuclear form. (0.5 AU in space)
- Muzzle Velocity: Mach 8
- Muzzle Blast: Flare of plasma and sparks, approximately four feet wide, preceded by a small fireball, and reaching approximately ten feet in length.
- Recoil: Approximately 1.4 ton recoil, as average for this size of railgun and projectile mass.
- Energy Source: Liquid elemental deuterium, ionized to plasma by electromagnetic forces in rail/coil guns

Area of Effect	
Distance from Detonation	Effective Purpose
0.0-2 meters	Tier 9 , Heavy Anti-Mecha
2.0-5 meters	Tier 8 , Medium Anti-Mecha
5-10 meters	Tier 7 , Light Anti-Mecha

Area of Effect	
Distance from Detonation	Effective Purpose
10-20 meters	Tier 6, Heavy Anti-Armor
20-40 meters	Tier 5, Medium Anti-Armor
40-80 meters	Tier 4, Light Anti-Armor
80-150 meters	Tier 3, Heavy Anti-Personnel
160-300 meters	Tier 2, Medium Anti-Personnel
300-540 meters	Tier 1, Light Anti-Personnel
540-900 meters	Tier 0, Anti-Individual

Minimum nonlethal range for an unprotected human: Approximately 900 meters

OOC Notes

Madi Harper created this article on 2017/10/23 16:23.

Approved by CadetNewb on 11/2/2017.

1)

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2)

This is a Gauss effect armed nuclear reaction, thus the note at the top. Any other application, treat as a low velocity thermobaric with a 3 tier penalty

3)

at ground zero, with splash, see table.

4) 5)

This article covers 50mm shell. Shell can be made in anything from the T3 .50 BMG to the T14 240mm shells.

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