

World's first 3D printed rocket set for inaugural flight

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California startup Relativity Space is carrying out a test flight of the world's first 3D printed rocket, the Terran 1.

The world's first 3D printed rocket is scheduled to blast off from Florida on Saturday on the maiden flight of an innovative spacecraft billed as

being less costly to produce and fly.

Liftoff of the [rocket](#), Terran 1, had been scheduled for Wednesday at Cape Canaveral but was postponed at the last minute because of propellant temperature issues.

The new launch window for the rocket built by California aerospace startup Relativity Space to put satellites into [orbit](#) is from 1:00 pm to 4:00 pm (1800 GMT to 2100 GMT) on Saturday.

Terran 1 is set to reach low Earth orbit eight minutes after blastoff on a voyage intended to gather data and demonstrate that it can withstand the rigors of liftoff and [space flight](#).

If the rocket manages to attain low Earth orbit, it will be the first privately-funded vehicle using methane fuel to do so on its first try, according to Relativity.

Terran 1 is not carrying a payload for its first flight but the rocket will eventually be capable of putting up to 2,755 pounds (1,250 kilograms) into low Earth orbit.

The rocket is 110-feet (33.5 meters) tall with a diameter of 7.5 feet (2.2 meters) and 85 percent of its mass is 3D printed with metal alloys, including the engines.

It is the largest ever 3D printed object according to the Long Beach-based company whose goal is to produce a rocket that is 95 percent 3D printed.

Terran 1 is powered by Aeon engines using [liquid oxygen](#) and liquid natural gas—the "propellants of the future," according to Relativity, capable of eventually fueling a voyage to Mars.



Tim Ellis, co-founder and CEO of Relativity.

Vulcan rockets being developed by United Launch Alliance and SpaceX's Starship use the same fuel.

Terran 1 has nine 3D printed Aeon 1 engines on its first stage and one 3D printed Aeon Vacuum engine on its second stage.

Built in 60 days

Relativity is also building a larger rocket, Terran R, capable of putting a payload of 44,000 pounds (20,000 kgs) into low Earth orbit.

The first launch of a Terran R, which is designed to be fully reusable, is scheduled for next year from Cape Canaveral.

A satellite operator can wait for years for a spot on an Arianespace or SpaceX rocket, and Relativity Space hopes to accelerate the timeline with its 3D printed rockets.

"Long-term, a major benefit of 3D printing is the ability to more rapidly democratize space due to the incredible cost effectiveness, radical flexibility and customization," the company said.

Relativity said its 3D printed rockets use 100 times fewer parts than a traditional rocket and a Terran 1 and a Terran R can be built from [raw materials](#) in just 60 days.

Relativity has already signed commercial launch contracts worth \$1.65 billion, mostly for the Terran R, according to CEO Tim Ellis, who cofounded the company in 2015.

"Medium-heavy lift is clearly where the biggest market opportunity is for the remaining decade, with a massive launch shortage in this payload class," Ellis tweeted.

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