

SpaceX Starhopper damaged in high winds

January 24 2019, by Brian Wang



Elon Musk indicates that the SpaceX Starhopper has been damaged after being toppled in 50 mile-per-hour winds. This will take a few weeks to repair.

I just heard. 50 mph winds broke the mooring blocks late last night & fairing was blown over. Will take a few weeks to repair.

— Elon Musk (@elonmusk) [January 23, 2019](#)

Elon Musk had mentioned in a tweet on January 5, 2019, that unexpected issues could delay the Starhopper by 4 weeks. This turned out to be an accurate prediction of bad weather causing damage and delays.

Aiming for 4 weeks, which probably means 8 weeks, due to unforeseen issues

— Elon Musk (@elonmusk) [January 5, 2019](#)

[The wind damage came after several weeks of rapid progress on the SpaceX Starhopper and the conversion of the Super Heavy Starship to use stainless steel instead of carbon fiber.](#)

Elon Musk explained in a Popular Mechanics interview that 300 series of [stainless steel](#) alloy can handle [higher temperatures](#) than [carbon fiber](#) or aluminum. Carbon fiber can theoretically take higher temperatures but in practice, the resin has problems after exposure to prolonged temperatures over 300 degrees Fahrenheit.

~1750K is peak heating expected on about 20% of Starship for LEO entry, ~1600K on 20%. Rest drops below 1450K, so no heat shield needed. Radiative cooling at T^4 takes care of 60% of the ship. Another reason for steel.

— Elon Musk (@elonmusk) [January 23, 2019](#)

The new metal rocket design will use some water and fuel to help cool parts of the rocket. Overall the new metal design will be lighter, stronger and lower cost. A huge benefit is the new design should massively reduce the development time for the new rocket.

It will be very interesting to see if SpaceX and Elon Musk are proven to be right again about their design choices. Will SpaceX complete a fully reusable rocket with 100 ton or more cargo capacity in less than four years?

Yeah it's crazy that stainless steel is close to surviving reentry heat without cooling!!! There's stainless steel upper stages that survived reentry even! It almost seems obvious now. Super cool.

— Everyday Astronaut (@Erdayastronaut) [December 25, 2018](#)

Source: Universe Today

Citation: SpaceX Starhopper damaged in high winds (2019, January 24) retrieved 19 April 2024 from <https://phys.org/news/2019-01-spacex-starhopper-high.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.