

Webb sunshield gives an 'open wide' for inspection

August 12 2015, by Rob Gutro



In this photo, engineers and scientists examine the sunshield layers on this full-sized test unit. Credit: Alex Evers/Northrop Grumman Corporation

The sunshield on NASA's James Webb Space Telescope is the largest part of the observatory—five layers of thin, silvery membrane that must unfurl reliably in space. The precision in which the tennis-court sized

sunshield has to open must be no more than a few centimeters different from its planned position.

In this photo, engineers and scientists examine the sunshield layers on this full-sized test unit.

Because there's a layer of the shiny silver material on the base under the five layers of the sunshield, it appears as if the sunshield has a mouth that is "open wide" while engineers take a look. The photo was taken in a clean room at Northrop Grumman Corporation, Redondo Beach, California.

The sunshield separates the observatory into a warm sun-facing side and a cold side where the sunshine is blocked from interfering with the sensitive infrared instruments. The infrared instruments need to be kept very cold (under 50 K or -370 degrees Fahrenheit) to operate. The sunshield protects these sensitive instruments with an effective [sun protection factor](#), or SPF, of 1,000,000. Sunscreen generally has an SPF of 8 to 50.

In addition to providing a cold environment, the sunshield provides a thermally stable environment. This stability is essential to maintaining proper alignment of the primary mirror segments as the telescope changes its orientation to the sun.

Earlier this year, the first flight layer of the sunshield was delivered to Northrop Grumman. Northrop Grumman is designing the Webb Telescope's sunshield for NASA's Goddard Space Flight Center, in Greenbelt, Maryland. Innovative sunshield membranes are being designed and manufactured by NeXolve Corporation of Huntsville, Alabama.

Provided by NASA's Goddard Space Flight Center

Citation: Webb sunshield gives an 'open wide' for inspection (2015, August 12) retrieved 26 April 2024 from <https://phys.org/news/2015-08-webb-sunshield-wide.html>

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