



SpaceX Dragon carrying Wear-Flex polyurethane compound.
Photo credit: [NASA](#)

STEM Student Experiment With Emergency Adhesive Lands On NASA Mission

Public agency maintenance and operations engineers can find themselves in some pretty demanding work environments -- sweltering boiler rooms, freezing bus barns, and every kind of weather extreme when outdoor projects need completion.

It's not rocket science to know that the materials they use must stand up to the rigors of such intense settings. Imagine if the materials stand up to the rigors of rocket science, too.

Cue the scientists. The student scientists. Recently a worksite polyurethane compound was utilized in a STEM student experiment conducted on the International Space Station (ISS). The research program was part of the Tulsa Research Kids competition and sponsored by the Tulsa Regional STEM Alliance.

Two middle schoolers at Summit Christian Academy in Oklahoma designed the experiment to observe the effect of microgravity on rubber compounds. For their project, the students used Wear-Flex™ 2500, a two-part adhesive compound that forms a rubber substance used in emergency repairs.

From Seaports To Spaceports

The students, Addison and Mayzie, have been best friends since the 3rd grade and say STEM subjects are their favorite at school. The idea for the experiment came from Addison's dad who uses Wear-Flex in barge, rail and truck transloading and material conveying services at the Port of Muskogee in Oklahoma.

The project was one of just 35 student investigations chosen for the NASA mission, from middle school to university students worldwide. On December 6, 2020, the experiment blasted off to the ISS from Kennedy Space Center, Florida on a [SpaceX Dragon](#) spacecraft and returned safely to Earth on January 13, 2021. [\[watch the launch\]](#)

Per the experiment instructions, the astronauts mixed the dual component repair compound by hand using plastic enclosure tubes that allow materials to remain separated. On Earth, the compound comes in a dual-barrel cartridge for one-step mixing and dispensing. The astronauts conducted the experiment over three days. Not only did rubber form during spaceflight, but it also remained intact and flexible upon return to Earth.

“Many times, we’ve been faced with a problem without a good solution.” But if you have a general adhesive that can be used in space, that’s almost like the next VELCRO®.”

— Col. Lockhart



Wear-Flex™ Quick-Mix™ 2500



Lawson Mega Manual Dispensing Gun



Lawson Pneumatic Quick Mix Dispensing Gun

NASA Mission “SpaceX Dragon”



When Repairs Can't Wait

NASA observer and former astronaut Col. Paul Lockhart, USAF Ret., reviewed the experiment prelaunch. Col. Lockhart, who spent more than 650 hours on the International Space Station, noted one problem seen on the ISS: when things are damaged in orbit and need repair, there aren't always a variety of materials to use.

“Many times, we've been faced with a problem without a good solution,” Col. Lockhart said. “But if you have a general adhesive that can be used in space, that's almost like the next VELCRO®.”

Altogether, the experiment spent a month orbiting Earth. The SpaceX capsule carrying the adhesive experiment, other experiments and cargo – 4,400 pounds in total – undocked from the ISS the morning of January 12, 2021, and splashed down off the Tampa coast the next evening. The experiment was returned to the student researchers for final analysis on January 15, 2021.

Keeping Things Pulled Together And Up And Running

Multipurpose tools that address numerous problems are time savers and economical. For example, a repair system for forklift and off-road tires that also repairs cracks and joints in concrete. That's Lawson Products' [Wear-Flex](#). Demonstrated on the ISS, the self-mixing urethane repair compound forms a flexible bond on various materials and withstands chemicals, grease, oil, and water. It's perfect for applications that involve vibration or expansion/contraction movement, and its short cure time ensures fast repairs.

Learn more at: www.lawsonproducts.com

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