



Fotograph courtesy of ATMOS Space Cargo

# To orbit and back.

## Project:

Phoenix 1 – Return capsule for material transportation from space

## Year of execution:

2025

## Customer:

ATMOS Space Cargo GmbH, Lichtenau, Germany

## Adhesives:

The use of high-performance adhesives enables new approaches in the construction of return capsules and sets standards for future missions.

## Website:

[atmos-space-cargo.com](https://atmos-space-cargo.com)

The self-deploying heat shield protects the Phoenix transport capsule on re-entry into the atmosphere.

## Innovation for return transportation from space

The German start-up ATMOS Space Cargo has set a milestone in European space travel with the successful test flight of its Phoenix 1 capsule. On April 21, 2025, the cargo capsule was launched into space and returned to Earth. The company's aim is to create a flexible, cost-efficient and reusable platform for the return transportation of up to 100 kg of payload from space – a decisive step for research, biotechnology and in-space manufacturing.

## Why do materials from space have to be brought back to earth at all?

Experiments in zero gravity provide unique insights: from the production of high-purity materials to the development of new types of medicines and research into biological processes. These valuable results can only be made usable through safe and well-planned return transportation. This is precisely where the Phoenix capsule comes into play.

## The heat shield in the endurance test

Extreme conditions prevail during re-entry into the earth's atmosphere. Temperatures of over 1000 °C and enormous frictional forces place the highest demands on the materials used. The Phoenix capsule uses an innovative, inflatable heat shield for this purpose.

## Adhesives for extreme requirements

Conventional adhesives reach their limits under these conditions. High-performance adhesives from Collano have been specially developed for applications where extreme temperatures and material diversity come together.

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