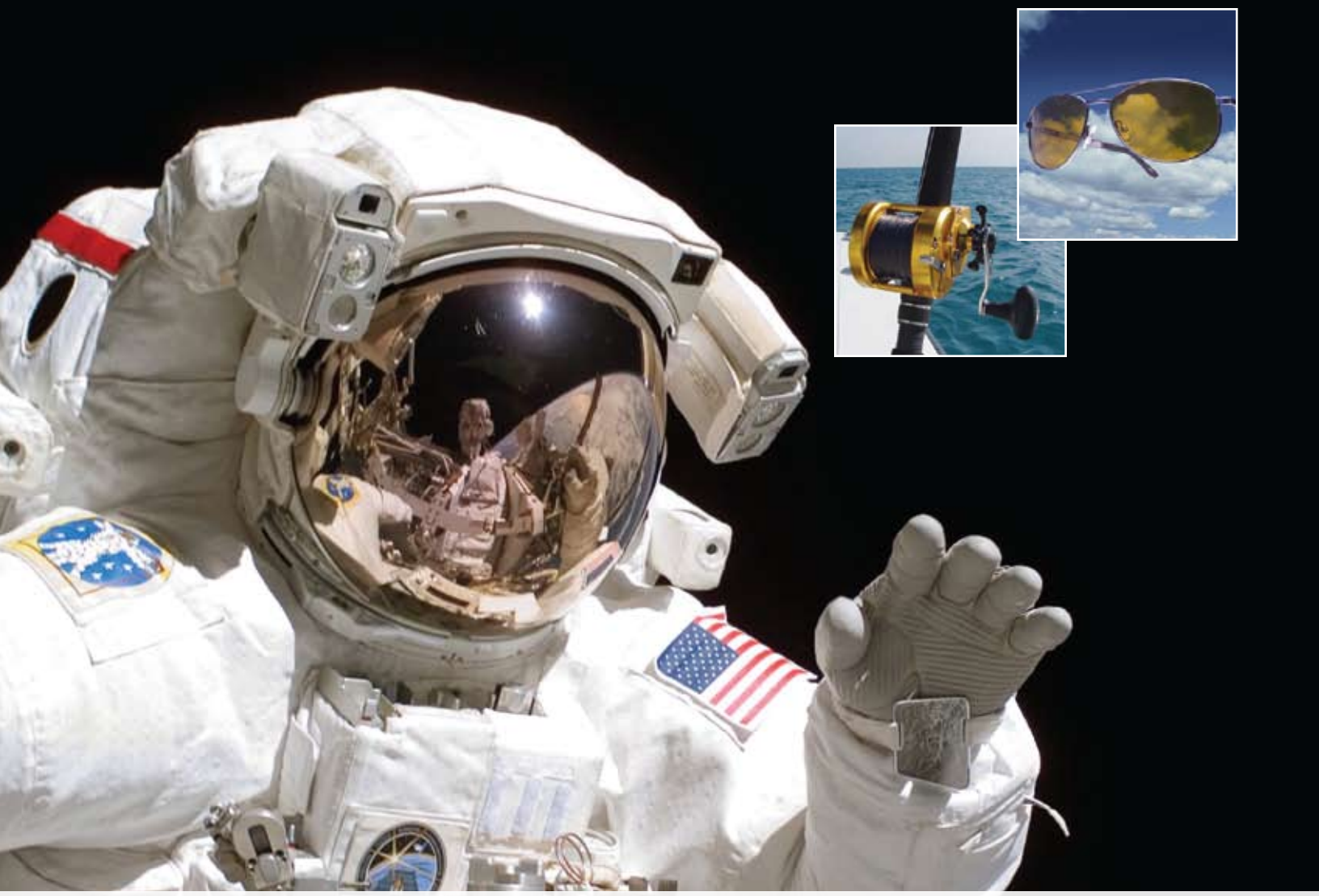
National Aeronautics and Space Administration

Consumer Spinoffs



Throughout the course of its over 50-year history, in order to fulfill its mission needs, NASA has created many unique and innovative technologies. Oftentimes these innovations find uses outside of their original aerospace applications, surprising us by ending up in everyday items, enriching our daily lives. While not all of the spinoff technologies enabled by NASA research and development end up in our homes—many meet complex medical and industrial challenges or help to preserve the Earth's natural resources—sometimes these high tech advances work their ways into the goods and services that we take for granted as consumers. Whether as nutritional supplements in infant formula or air purifiers that prevent over-ripening and spoiling of produce, NASA technology is everywhere we look.

Space Age Fabric Controls Temperature

Research into temperature-controlling textiles for space suits led to the development of a fabric now incorporated in ski apparel, socks, bedding, and business suits, keeping wearers comfortable in a variety of settings.

Space Research Fortifies Nutrition Worldwide

Experiments with algae as a food source for long duration space flight led to the discovery of a nutrient now found in over 90 percent of the infant formulas sold in the United States, as well as those sold in over 65 other countries.

Handheld Portable Vacuum Cleaner Busts Dust

An Apollo-era partnership with Black & Decker to build battery-operated tools for the Moon led to the development of the popular cordless, hand-held vacuum: the Dustbuster.

Lubricants Protect Machines and the Environment

Environmentally safe lubricants developed for the crawler vehicle that carries the space shuttle to the launch pad are now being used in cars, on fishing tackle, and for simple jobs around the house.

Space Technologies Freshen Air

A NASA-developed ethylene reduction device for a plant growth unit is now in widespread use, helping preserve fresh produce at grocery stores, food storage facilities, and in the medical and dental fields, killing airborne pathogens.

Popular Memory Foam Provides Cushioning and Comfort

Originally developed to increase comfort and safety in NASA aerospace vehicle seats, temper foam now appears as cushioning in protective sports gear, footwear, prosthetics, and body-conforming mattresses and pillows.

Electrolyte Concentrates Treat Dehydration

Research into hydration for astronauts returning to Earth led to the development of a unique electrolyte concentrate, now available to athletes looking to combat dehydration and boost performance.

Mars Cameras Make Panoramic Photography a Snap

Mars rover technology inspired the Gigapan robotic platform for consumer cameras. Using photographic stitching software, the platform automates the creation of digital panoramas containing incredible detail.

Amorphous Alloys Surpass Steel and Titanium

NASA collaborated in research that developed liquid metal alloys with the elasticity of plastics and twice the strength of titanium. The material appears in numerous products, including golf clubs, tennis racquets, and baseball bats.

Programmable Ovens Let You Start Dinner from the Web

NASA engineers created technology allowing users to control devices remotely, including a home oven. The oven can refrigerate food until the programmed cooking cycle begins, ensuring a perfectly cooked dinner when the user arrives home.

Additive Transforms Paint into Insulation

NASA engineers partnered with private industry to create a low-cost, non-toxic powder made of gas-filled, ceramic microspheres that is mixed into ordinary paint, allowing the paint to act like a layer of insulation.

Space Lens Provides Eye Protection on Earth

A sunlight-filtering lens developed by NASA in the 1980s to provide eye protection in space and during laser and welding work is now incorporated in over 40 styles of commercially available sunglasses.

For more information about NASA spinoffs, please visit **spinoff.nasa.gov**.

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