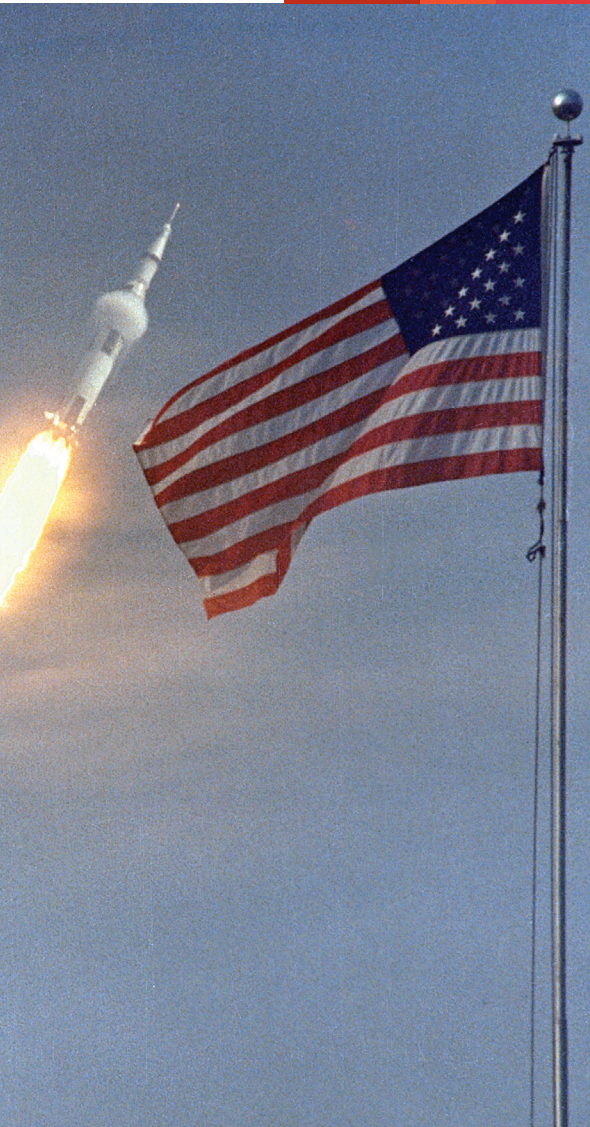


# DuPont Science: Out of this World and Down to Earth.

**DuPont products have played a critical role in the U.S space program from the earliest days of suborbital flights, to the Space Shuttle missions, to unmanned probes of our solar system. These same products have also protected human life here on Earth while pushing technology forward in a wide range of endeavors. Following are just a few, select examples.**

- The spacesuits for the early Earth and lunar orbit missions of the Apollo program used nylon, invented by DuPont, as a major component.
- For the Apollo 11 moon landing mission, 20 of the 21 layers in each spacesuit were made with DuPont inventions, including: DuPont™ Nomex® fiber, Teflon® fluoropolymer, Kapton® polyimide film, neoprene and nylon.
- The first U.S. flag on the moon was made of DuPont nylon.
- Today's astronauts wear suits made with Nomex® and with DuPont™ Kevlar®. A parachute of Kevlar® fiber went on the Galileo probe of Jupiter, while a "blanket" of the same material wraps the inner walls of the International Space station to protect it from micrometeorites.
- On Earth, Nomex® is used in protective garments for firefighters and first responders, while Kevlar® is the leading brand in ballistic protection for law enforcement and the military.
- DuPont™ Krytox® lubricants were first used by NASA for the Apollo space flights in the 1960s because these oils and greases work at low and high temperature extremes and are non-flammable. They continue to be used in space applications today.



Apollo 11 Launch. Image Credit: NASA

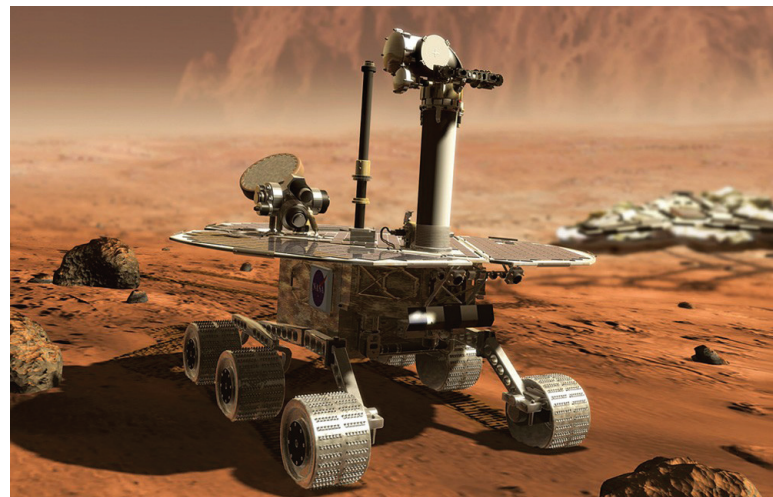


*The miracles of science™*



Firefighting Skills Training. Photo Credit:  
NASA Ames Research Center / Eric James

- Krytox® lubricants are used on Earth in a wide variety of industrial and automotive applications, including the manufacturing and operation of the latest civilian and military aircraft. In addition to functioning at temperature extremes and being non-flammable, they are chemically inert and safe to use in all areas of oxygen service.
- A variety of DuPont materials made exploration of the Martian surface possible. The Phoenix Mars Lander was protected in its journey and on the planet's surface by DuPont™ Tedlar® polyvinyl fluoride film. The Mars Rovers each had nearly 70 yards of DuPont™ Pyralux® flexible circuit materials in their cabling, secured with tape of DuPont™ Kapton® polyimide film. The strip heaters on the Mars Rovers also used Kapton® for thermal control so they could operate in the planet's cold atmosphere.
- On Earth, Pyralux® connects the display in a flip phone to the keypad and is used, along with Kapton®, in flexible circuits in laptop computers. Kapton® is also used in the film that enables computer printer cartridges, while Tedlar® is a key component in photovoltaic modules, providing the backing needed to protect the solar cells that create energy.
- High resolution signals beaming back to Earth from cameras on spacecraft are made possible by flexible circuits that use Pyralux®, DuPont™ Riston® dry film photoresists and DuPont™ ImageMaster® phototooling films.
- DuPont imaging materials are vital to the fabrication of printed circuit boards in desktop computers.



2003 Rover – This artist's rendering shows a view of NASA's  
Mars 2003 Rover as it sets off to roam the surface of the red planet.



The miracles of science™