



#AskNASA

**WHAT ARE THE NEXT
GENERATION SPACESUITS?**

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00:00:03,220 --> 00:00:09,650

Hi, I'm Amy Ross. I'm a spacesuit engineer
I designed spacesuits like these.

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00:00:09,650 --> 00:00:12,640

This is AskNASA and I'm here to answer your question.

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00:00:12,640 --> 00:00:14,640

Music

4

00:00:18,200 --> 00:00:21,289

For the Artemis missions, Astronauts will wear spacesuits like these and they'll be able to walk on the

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00:00:21,289 --> 00:00:27,160

moon in a space suit like this. The xEMU
stands for Exploration Extravehicular Mobility Unit.

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00:00:27,160 --> 00:00:31,220

So xEMU. On the front of
the suit, here this is called the display

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00:00:31,220 --> 00:00:34,639

and control unit, and this is how they
control the backpack or life-support

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00:00:34,639 --> 00:00:38,149

system of the spacesuit. The new
generation of spacesuits or the xEMU

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00:00:38,149 --> 00:00:42,049

has a lot more mobility, so they're able
to do the science we need them to do

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00:00:42,049 --> 00:00:46,180

such as geology, pick up rock samples and also interact with Rovers. but can she

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00:00:46,180 --> 00:00:48,200

But, can she dab?

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00:00:48,220 --> 00:00:49,840

Yes, she can.

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00:00:49,840 --> 00:00:51,840

She can also floss.

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00:00:52,500 --> 00:00:58,400

There are new technologies. So we're implementing new materials and we have more bearings in the suit,

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00:00:58,400 --> 00:01:01,279

and that allows her to move better. We make spacesuits for humans.

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00:01:01,280 --> 00:01:06,380

They will be wearing the suit when we send the first woman to the moon and the next man in 2024.

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00:01:06,440 --> 00:01:09,619

Yes, the layers of the spacesuit protect against all the harsh conditions

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00:01:09,619 --> 00:01:14,570

on the lunar surface, including Moon dust. So the boots are very different more

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00:01:14,570 --> 00:01:17,160

like a good hiking boot and they have adjustment for better fit. donning is a

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00:01:17,160 --> 00:01:20,100

Donning is the term we use for putting on the spacesuit.

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00:01:20,100 --> 00:01:22,100

Doffing is taking it off.

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00:01:23,520 --> 00:01:25,980

So, why does NASA have two Artemis spacesuits? This is the Orion crew survival suit and it's

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00:01:25,980 --> 00:01:28,560

This is the Orion Crew Survival Suit and it's

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00:01:28,560 --> 00:01:31,960

different than the xEMU that you just saw
and Dustin's gonna tell you all about it.

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00:01:31,969 --> 00:01:34,999

Thanks Amy.

This is the Orion Crew Survival Suit.

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00:01:34,999 --> 00:01:39,049

This suit is worn during launch and entry
of Orion. This suit is also designed for

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00:01:39,049 --> 00:01:43,159

contingency operations. If we had an
emergency in deep space, the crew could

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00:01:43,160 --> 00:01:45,820

actually survive in this suit and live
for up to six days

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00:01:45,820 --> 00:01:50,620

Is this spacesuit comfortable? Oh the spacesuit is very
comfortable. It's multiple layers of

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00:01:50,630 --> 00:01:53,990

fabric but they're all very form-fitting
and tailored specifically to the

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00:01:53,990 --> 00:01:58,640

occupant. It fits perfectly to the person
and also perfectly to the seat that they sit in.

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00:01:58,740 --> 00:02:01,560

So, why is the spacesuit orange?

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00:02:01,560 --> 00:02:06,520

Well, the original versions of the suit were

actually blue and we actually egressed

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00:02:06,520 --> 00:02:10,239

into the water fancy word for getting out of the vehicle, and we practiced our

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00:02:10,239 --> 00:02:13,480

search and rescue ops. Orange is the most visible color for search-and-rescue

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00:02:13,480 --> 00:02:15,440

crews coming to retrieve the crew.

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00:02:15,440 --> 00:02:17,440

Hey,
what's that on your leg?

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00:02:17,600 --> 00:02:22,620

Oh, you mean these? These are actually oxygen bottles so if we were to have to disconnect from

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00:02:22,620 --> 00:02:27,680

the Orion capsule, they provide us about 30 minutes of air if an emergency was to occur on orbit.

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00:02:27,780 --> 00:02:30,980

Hey, is that a space fanny pack under your arm?

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00:02:30,980 --> 00:02:37,180

This is actually my life preserver unit. In case, I had to jump out of Orion into the

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00:02:37,180 --> 00:02:41,290

water, I can pull these tabs and deploy it. So everything about this spacesuit

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00:02:41,290 --> 00:02:43,380

really is built for survival.

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00:02:43,380 --> 00:02:46,100

What's the spacesuit material experiment?

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00:02:46,100 --> 00:02:49,800
We're sending some spacesuit materials to Mars
to test them in the Martian environment.

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00:02:49,810 --> 00:02:54,190
This experiment will show how our helmet
materials and our soft goods hold up in

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00:02:54,190 --> 00:02:58,750
the Mars atmosphere. Our spacesuits
really are a spacecraft human-shaped

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00:02:58,750 --> 00:03:02,410
that protect our astronauts. These are
the next-generation Artemis spacesuits

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00:03:02,410 --> 00:03:05,800
that will go to the Moon and on to Mars

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00:03:11,740 --> 00:03:13,740
Laughing