

overview



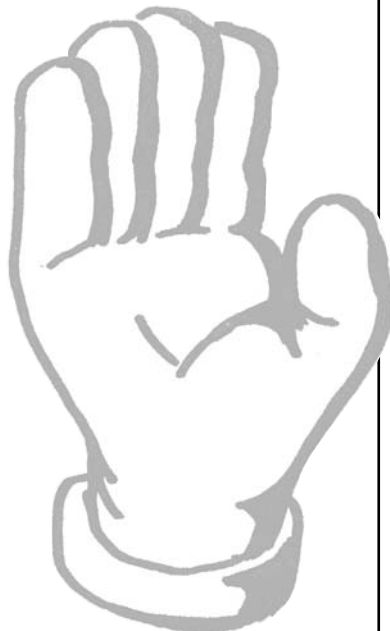
IT IS NOT BY CHANCE OR FOR LOOKS THAT THE OUTER LAYER OF A SPACE SUIT IS CONSTRUCTED OF A DURABLE WHITE FABRIC. ENVIRONMENTS IN OUTER SPACE FLUCTUATE FROM SHADE TO FULL SUNLIGHT. IN FULL SUN, THE TEMPERATURE WILL RISE TO 120 DEGREES C AND IN SHADE DROP TO MINUS 100 DEGREES C. SUCH EXTREMES ARE CONSTANTLY BEING ENCOUNTERED BY ASTRONAUTS OUT ON EXTRAVEHICULAR ACTIVITIES. THE SIDE OF THE SPACE SUIT FACING THE SUN COOKS WHILE THE SIDE IN SHADE FREEZES. WHITE FABRIC ON THE OUTSIDE OF THE SUIT IS USED BECAUSE IT ABSORBS LESS HEAT THAN DOES DARK FABRIC.

THIS ACTIVITY ALLOWS STUDENTS TO EXPERIENCE THE RELATIVE EFFECTS OF LIGHT VERSUS DARK SURFACES ON HEAT ABSORPTION AND RADIATION.

materials

- *HEAVY DUTY ALUMINUM FOIL*
- *WHITE PAINT*
- *BLACK PAINT*
- *GLUE*
- *MEDIUM PAINT BRUSH*
- *THERMOMETERS (OPTIONAL)*
- *ICE CUBES (OPTIONAL)*

procedures



1. FORM A PIECE OF ALUMINUM FOIL TO FIT THE HAND.
2. PAINT ONE SIDE OF THE MITT WITH WHITE PAINT AND THE OTHER WITH BLACK PAINT. ADD A COUPLE DROPS OF GLUE TO THE PAINT TO MAKE IT ADHERE BETTER TO THE FOIL.
3. HOLD THE WHITE SIDE, PALM FACING THE SUN FOR APPROXIMATELY FIVE MINUTES. DESCRIBE THE TEMPERATURE.
4. CHANGE HANDS AND HOLD THE BLACK SIDE, PALM FACING THE SUN FOR APPROXIMATELY FIVE MINUTES. DESCRIBE THE TEMPERATURE. WHAT MAKES THE DIFFERENCE?
5. OPTIONAL: THERMOMETERS CAN BE PLACED INSIDE THE GLOVE TO RECORD AND OBSERVE THE DIFFERENCES IN THE HEAT ABSORPTION.
6. OPTIONAL: ICE CUBES CAN BE PLACED ON THE WHITE SIDE OF ONE MITT AND THE DARK SIDE OF ANOTHER MITT TO COMPARE HOW FAST THE ICE CUBES MELT.