



Blubber Gloves

Shortening is a type of fat that is great at keeping heat in and cold out. Similar to a layer of shortening, marine mammals have a layer of fat called blubber right below their skin to keep them warm.

Whales, seals, sea lions, and walruses all have a thick layer of blubber. Some Arctic and Antarctic animals, such as right whales, have blubber that is more than 12 inches thick!

Blubber keeps animals warm because it acts as an insulator, slowing down the loss of heat to their cold environment. Unlike fat found in humans or other mammals, blubber contains blood vessels, which can get smaller in cold water—reducing blood flow and the energy needed to stay warm. Blubber can also increase buoyancy and store energy.

When you use the blubber glove in this experiment, your hand isn't directly touching the cold water! Instead, the fat molecules in shortening act like blubber, creating a barrier between you and the cold temperature in the bowl.

Materials needed:

- 3 Ziploc® bags
- Spoon
- Shortening
- Duct tape
- Large bowl of ice water

Step-by-step instructions:

1. Using a spoon, fill one Ziploc® bag about 1/4 full of shortening.
2. Put your hand in the second Ziploc® bag and push it into the shortening-filled bag.
3. Spread the shortening out to create a consistent layer around your hand.
4. Fold the inner bag over the top of the outer bag and secure the fold with duct tape.
5. Wearing the “blubber glove” on one hand and a third Ziploc® bag on the other, dip both hands into the bowl of ice water.

Additional explorations:

- Try making an insulated glove with a material that is not shortening. Does the new material work as well? Why or why not?

Discussion questions:

- Did the blubber glove help your hand stay warm? Why or why not?
- How do you stay warm when it is cold outside?
- Is blubber the same as human fat?
- Do all animals use blubber? What are other ways animals can stay warm?



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(continued)

Additional resources:

Learn more about how different animals survive cold temperatures

https://www.youtube.com/watch?v=TwfKCX_8fbA

Do polar bears have blubber?

https://www.youtube.com/watch?v=sWc_82cMSiU