

Build a Better Bandage

By Sherri Rukes

Introduction

What do you think makes one bandage work better than other kinds? Your task is to become a “bandage engineer” and design a bandage that has what it takes to absorb fluid and stay in place while the body heals (if there were a real cut or injury).



SAFETY SUGGESTIONS

- Do not test your bandages on any person or animal. The tape you are experimenting with in this activity is NOT intended for use on skin. You will use either wax paper, foil, or metal as a testing surface (instead of your actual skin) in this activity.
- Use caution when handling scissors.

Question to Investigate

Which combination of padding and tape makes the best bandage?

Materials

- 3 kinds of tape, such as masking, packaging, clear, cloth, electrical, washi tape
- 3 kinds of padding, such as a small piece of cloth, cotton ball, paper towel, Kleenex, gauze, felt, notebook paper
- 1 testing surface, such as wax paper, aluminum foil, or a metal cookie sheet
- Scissors
- Eyedropper
- Water
- Paper towels



Procedure

Sticky Test

1. In the chart below, list the 3 types of tape and the 3 types of padding you gathered.
2. Make 9 bandages by combining each type of tape with each type of padding.
3. To test how the bandage might stick to skin, attach one of the bandages firmly onto the testing surface (wax paper, foil, or metal). Now pull it off. Add a score of 1 to 5 based on the instructions under “How to Rate Your Bandages.” Repeat this for each of the bandages.
4. Next, try removing the padding from each bandage. Record how easy or difficult it is to remove the padding. Score them from 1 to 5 in the chart.

Absorbency Test

5. Choose the two best combinations of tape and padding from the Sticky Test and name them Sample A and B.
6. Build three new pairs of Sample A and Sample B bandages so that one pair (A & B) is sized for each of the wounds listed in Step 7.
7. Use an eyedropper to add the suggested drops of water to the padding of each pair of bandages as described in the box below. The drops of water represent the typical amount of fluid from each type of wound.

Vaccine in arm	1 drop
Cut on fingertip	15 drops
Scraped knee	40 drops

8. Now stick the wet bandages onto the testing surface, and remove them like you did in the Sticky Test. Which combination of padding and tape makes the best wet bandage? Why?

Sticky Test				
Types of tape	On a scale of 1-5*, how well does tape stick to:	Types of padding		
	the surface?			
	the padding?			
	the surface?			
	the padding?			
	the surface?			
	the padding?			



* How to Rate Your Bandages

- 1 = doesn't stick much
- 2 = sticks a little
- 3 = sticks but comes off
- 4 = sticks but leaves marks when removed
- 5 = very sticky, hard to remove

How does it work?

Cotton gauze is commonly used as padding for bandages because it absorbs fluid that oozes from wounds, and then allows it to evaporate. The sticky part of most bandages is made of either fabric or plastic tape. It must stick to the skin and padding, but not to the wound. The bandage also needs to be easy to remove, so that it can be changed daily. Bandages need to be sticky on the skin, but must peel off without leaving a sticky residue. How do you think the design of bandages might change in the future?

Sherri Rukes is a chemistry teacher at Libertyville High School in Libertyville, Illinois.