

B5 ACTIVITY 2: WHAT TYPES OF SURFACES ABSORB HEAT?

Background

This activity challenges students to think about how the texture of a surface affects heat absorption – will a smooth surface absorb better than a rough one?

Equipment required (per group):

- Two used food cans with smooth exteriors
- Two used food cans with ridged exteriors
- Heater or an IR lamp
- Stopwatch
- Tea light
- Matches or lighter
- Tweezers or similar
- Thumbtacks

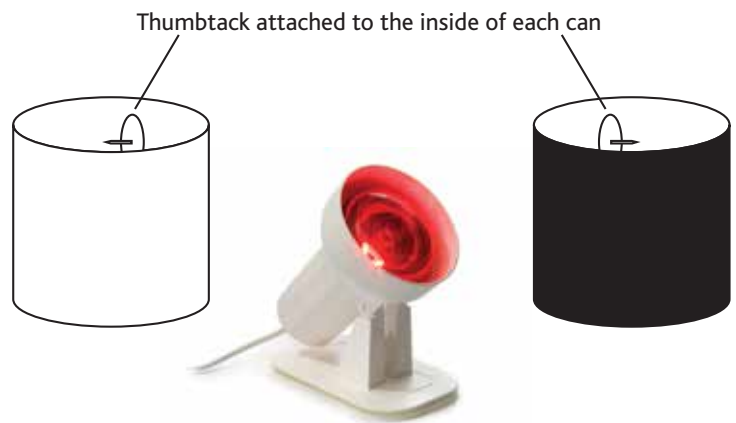


Figure 32

What to do:

1. Light the tea light.
2. When enough wax has melted, use the tweezers to dip the head of a thumbtack into the melted wax and then fix the thumbtack onto the inside of the can as shown in Figure 32. Repeat for the second can.
3. Place both cans at an equal distance from the lamp.
4. Switch the lamp on and, at the same time, start the stopwatch.
5. Time how long it takes for each tack to drop down. Note when you see the tack fall off, rather than when you hear the sound of it hitting the bottom of the can.
6. Repeat the above steps using different combinations of both surface types and colours.
7. Draw suitable graphs for the results and comment on them.

Discussion point:

- A useful follow-up research project is an investigation of the role played by both surface texture and colour on the exteriors of buildings across the world.