

## PRACTICAL EXPERIMENT 3 - THE SOAKING TEST

Practical Experiment 1 and 2 highlighted how EndoTherm reduces surface tension of water. The overall reduction is over 60%. But how does this improve a heating systems efficiency? A wetter liquid with a lower surface tension can touch more of the radiators surface. This visual test shows how EndoTherm can touch more of a surface than water

**Difficulty:** Low  
**Time Required:** 10 minutes

### Equipment Required:

A flat, level surface  
A dish towel or paper towel  
2 pipettes  
Gauze  
1 glass of tap water  
1 bottle of Endotherm solution

### Note:

EndoTherm test solution and gauze is available as part of the Eco-Schools resource pack please contact EndoTherm to request it. Cardboard can be used as an alternative to gauze. Washing up liquid can also be used as an alternative to mimic the EndoTherm effect in the practical experiments in the classroom. Washing up liquid is not a substitute for EndoTherm and should NOT be dosed into a heating system under any circumstances.

## PROCEDURE

1. Fill the pipettes. One with tap water and the other with the EndoTherm sample.
2. Put the gauze on the flat level table surface.
3. Starting with normal water. Add a single drop of water onto the gauze.
4. **Question? Do you think the EndoTherm solution will remain as a droplet or sink in?**
5. Repeat with EndoTherm
6. If you have time you could try different surfaces. Cardboard and paper towels can provide great results. You could also water down the EndoTherm solution and see how this changes the result.



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### OBSERVATION AND RESULTS

The water droplets will remain intact on the surface of the gauze. The EndoTherm in the picture below (the 1000ppm bottle) will sink into the gauze over the course of 5 seconds. As you reduce the concentration the ability of the water to sink in reduces.

By sinking in, EndoTherm is touching more of the gauze surface and this effect is the same as inside a heating system. This makes the surface of the radiator larger and provides a larger area to transfer heat through. This is the same as installing a larger radiator in a property.

