



Dissolving Urea

On SCOPE's Nitrogen episode, Bella discovered something interesting happens when Urea dissolves.

Here's how you can do it at home:

What you need:

- A bag of Urea (try the Nursery or Hardware store)
- 3 mixing containers (Bella used old round takeaway containers)
- Plastic spoons
- Thermometer
- Sugar
- Water

What to do:

1. Start by half filling each container with water.
2. Take the temperature of the water and make a note of it.
3. Next add two scoops of sugar to the first container and two scoops of urea to the second container. Nothing to the third yet.
4. Give the mixtures a good stir to help things dissolve. Then check the temperatures again.

Taking it to the Max!

1. To the third container add as much Urea as you can dissolve.
2. Mix well and take the temperature.

What's happening?

When most things dissolve, the temperature of the solution does not change. This is exactly what happened to the sugar solution. But dissolving Urea is different, it is an endothermic process. This means it absorbs heat from its surroundings as it proceeds. In this case, the "surroundings", means the water.

The opposite of this is exothermic, that means to give off heat. Combustion (when things burn) is a commonly seen example of an exothermic reaction.

Urea is also really soluble, 1 litre (or 1 kilogram) of water can dissolve over 1 kilogram of Urea, and the more that dissolves, the more heat it absorbs.