

STEM EXPERIMENT KIT™

EN

Manual

Molecule Beads

WARNING — This set contains chemicals [and/or parts] that may be harmful if misused. Read cautions on individual containers [and in manual] carefully. Not to be used by children except under adult supervision.

WARNING! Not suitable for children under 8 years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.

THAMES & KOSMOS

EN Kit contents

- › Red alginate liquid (item no. 720641)
- › Yellow alginate liquid (item no. 720640)
- › 2 packets of calcium lactate powder (item no. 720639)
- › Cup with a lid
- › Spatula
- › Spoon



You will also need: *scissors, an old plate, water*

Information regarding the chemicals

Molecular liquid: alginate solutions, 20 g each (item no. 720641/720640), (ingredients: water, 0.5% sodium alginate, red/yellow dye, E219); calcium lactate, 2 g each (item no. 720639)

Do not inhale. Do not get any material in your mouth or eyes. In case of contact with eyes, rinse with plenty of water and hold open if necessary. Dispose of empty packets and other waste in the household rubbish.

Dear parents!

With this set, you and your child can carry out exciting and fun experiments on the topic of molecules. Please provide your child with help and advice throughout the experiment.

The materials in this kit are not harmful. The substances are also approved food additives. Nevertheless, please read the instructions and information relating to the materials, discuss them with your child before starting the experiment, and follow them and keep them handy. Only carry out those experiments described in the instructions.

Please keep children under 8 and animals away from the experimentation area and the experimentation material. It is best to use a non-sensitive environment (outside or in the bathroom) as the work space, which can be easily cleaned, since the dyes can stain rugs, tablecloths, or clothing. It is also a good idea to wear old clothes when carrying out the experiments.

Do not store the materials near food and do not eat or drink in the experimentation area. Wash hands thoroughly after the experiments. Clean the work space and all the materials thoroughly after carrying out the experiments.

WARNING! Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled. Keep packaging and instructions, as they contain important information.

We hope you and your child have lots of fun experimenting!

Experiment 1

YOU WILL NEED:

> 1 bag of calcium lactate powder, red and yellow alginate solution, spatula, measuring cup, spoon, scissors, water

1. Formulating the calcium lactate solution:

Fill the measuring cup with water up to 1 cm below the edge. Carefully cut open a bag of calcium lactate powder and pour the contents into the measuring cup. Stir using the spatula until the powder has dissolved.

2. Place a few individual drops of the two alginate solutions into the calcium lactate solution, one after the other.

3. You can now retrieve the molecule beads using the spoon, and hold them in your hand. Scoop the beads into the small cup.



What's Happening?

When the alginate solution comes into contact with calcium lactate, the liquid turns into a jelly-like solid ball. A giant molecular complex has formed, or what is known as a polymeric compound. The bead's shell consists entirely of this compound. You have thus created a giant molecule!

Experiment 2

YOU WILL NEED:

> Your calcium lactate solution from experiment 1, red or yellow alginate solution, spatula, *old plate (light colored)*, *scissors*

1. Evenly squeeze alginate solution out of the bottle and into the measuring cup containing the calcium lactate solution without stopping. The longer you squeeze the bottle, the longer the polymer strand will be.
2. Make a few strands and then fish them out of the solution using the spatula, and place them on an old plate and take a look at them.
3. Can you see an air bubble trapped in a line? Try to move the air bubble back and forth by carefully squeezing the line.
4. Slice through a line molecule using the scissors. Does any liquid come out? Then wash the scissors. Try it again a few minutes later using the other color of alginate solution.



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