

## Scientific experiment : the properties of aluminum

### Activity summary

As aluminum has several properties, this experiment allows children to familiarize with the principle of static electricity and ionic conduction.

### Target cycles

2<sup>nd</sup> and 3<sup>rd</sup> cycles

### Target competencies

#### Transversal competencies

- Competency 1 : Using the information
- Competency 3 : Exerting one's critical judgment
- Competency 4 : Using one's creative thinking
- Competency 7 : Shaping one's identity
- Competency 8 : Cooperating

#### Science and technology

- Competency 1 : Proposing explanations or solutions to scientific or technological problems
- Competency 2 : Making good use of tools, objects and processes of science and technology

### Instructions

1. Put a large piece of paper on a table and fix it using tape;
  2. Cut little pieces of aluminum foil and crumple them into balls of about 5 mm diameter without compressing the foil. The balls must be small and light;
  3. Inflate the balloon and charge it with static electricity by rubbing it against the wool for at least thirty seconds;
  4. Put the aluminum balls on the piece of paper. Bring the balloon close to them from above. The balls will pop like popcorn.
- Explanation: Static electricity works a bit like a magnet. By rubbing the balloon, you charge it with positive ions. This energy seeks to circulate naturally. When the balloon overcharged with positive ions is brought close to the neutral aluminum balls, the latter are attracted by the contrast between the negative and positive ions. Energy seeks to balance itself. In the transformation pots of aluminum plants like Alcan's, a similar phenomenon can be observed. However, the alumina particles

remain attached to the anode, turn into aluminum then fall at the bottom of the pot.

### Required material

- Aluminum foil
- Balloon
- Wool (sweater, scarf, etc.)
- Adhesive tape.

