

The scenario

Subject	Thermal properties of matter / Thermal expansion of coin
Length	1:38
Main goals	Get familiar with thermal expansion of solids
Detailed goals	Show that a typical metal expands with temperature increased and contracts with temperature decreased
Structure and description of experiments:	
1. Introduction	Description : Most of materials that can be found around us change dimensions with temperature. We will show that even minuscule expansion can be shown using not so complicated mechanical stuff.
2. Main subject	Description: The movie shows how we can easily show the thermal expansion.
Experiments	<p>Tools:</p> <ul style="list-style-type: none"> • small coin, • board with two nails, • gas burner <p>Description: Put the nails in the board so that they are little wider than a coin. Put a coin between the nails. It's going down. Now heat the coin with a burner and put it on the nails again. In this case, the coin stays on the nails for some time.</p> <p>Questions: Why doesn't the coin fall down? What happens to the metal when it is heated? Can thermal expansion damage materials?</p> <p>Conclusions: As energy in particles increases, they start moving faster and faster and therefore expanding the substance. The expansion and contraction of the materials must be considered when designing large structures. It can also be used in medicine, e.g. to change the size of a stent.</p>
3. Summary, evaluation and remarks	<p>The film can be used in the implementation phase of the lesson as an illustration of the discussed issue.</p> <p>The film can be used as a repetition of the topic related to the thermal expansion.</p> <p>Level: primary school</p>