

The scenario

Subject (field/title)	Thermal properties of matter/temperature of liquid nitrogen
Length of movie	3:26
Main Goals	Changes in the state of matter
Detailed Goals	The boiling of nitrogen at atmospheric pressure
Structure and description of the experiments	
1. Introduction	Explanation: This video shows the phenomenon of nitrogen boiling
2. Main topic	Description: The video presents boiling as evaporation in the entire volume of a liquid.
Part 1	
	<p>Tools: Transparent thermos (or two beakers placed one inside the other and thermally insulated from each other with polystyrene), liquid nitrogen, thermometer</p> <p>Description: Pour liquid nitrogen into a thermos and observe its temperature with a thermometer. We also observe the boiling of the nitrogen in the thermos. On the thermometer, we observe a decrease in temperature until it reaches a temperature of about -195.8°C. In the sequence, we observe the boiling of liquid nitrogen, which takes place at a constant temperature (like the boiling of water).</p> <p>Questions: Why doesn't nitrogen boil at 100°C?</p> <p>Conclusions: Boiling differs from evaporation in that the first one takes place at a constant temperature defined as the boiling point and it is evaporation in the entire volume of the liquid, while the second one takes place at any temperature but only on the surface of the liquid.</p>
3. Summary and notes	<p>Point out to students that boiling is a physical phenomenon and that every substance has a boiling point that depends on the type of substance and the pressure acting on that substance.</p> <p>Level: primary school and high school</p>