

Answer on Question #55511, Physics / Other

Why do we feel cold when we spread few drops of ether or spirit on our palm?

Answer:

The liquid evaporates which means that the liquid converts to a gaseous state. Evaporation is very important in the cooling of surfaces. This process requires energy, which it extracts from your body in the form of heat. The molecules of spirit get the energy they need from our hand, leaving the molecules of the hand with less energy and so colder.

This same process cools you down when you sweat. The reason that spirits feel colder than say room temperature water is that the boiling point of alcohol is much lower than water (about 78 degrees C for ethanol and 100 degrees C for water). This means that at room temperature the partial pressure of ethanol is higher which means more of it is evaporating from your skin than water, requiring more energy (which makes your hand feel cold).

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