Tracking Energy in Two Drying Pads

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A display dries two pads made from the same material and soaked with equal masses of water. One is spread out and the other is folded. The model requires 2.30 kJ to evaporate 1.00 g of water during the test. A separate sensor estimates how much thermal energy the wet pad loses as it dries.

Pad	Water evaporated (g)	Thermal energy lost by wet pad (kJ)
Spread	0.50	0.60
Folded	0.20	0.20

1 Which pad transfers more water to the air during the measured interval?

(1) Spread only

(2) Folded only

(3) They evaporate the same mass.

(4) Neither evaporates water.

2 Calculate the energy used for evaporation from the spread pad. Show how the water mass enters your calculation. [1]

Answer and work

In this model the energy used for evaporation comes from the wet pad and from its warmer surroundings. There are no other energy transfers during the comparison.

3 Find the energy supplied by the surroundings for each pad. Use both the evaporated mass and the sensor reading. [1]

Answer and work

A repeat uses the folded pad. It still evaporates 0.20 g, but a separate measurement shows that its surroundings transfer only 0.10 kJ toward evaporation.

4 Calculate how much thermal energy the pad must supply in the repeat. Explain why the same evaporated mass does not require the pad itself to lose the same amount of energy. [1]

Answer and work