

Exothermic and Endothermic

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A reaction mixture goes from 21 °C to 35 °C. Exothermic or endothermic?

Step 1 · Temperature change

It rose by 14 °C.

Step 2 · Meaning

Energy was transferred from the reacting chemicals to the surroundings (the water, the tube, the thermometer).

Answer: Exothermic

Check: Exo = exit: energy goes out.

2. Now try one with the steps

Why does an instant ice pack feel cold?

Step 1 · What happens inside

Step 2 · Energy

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is an exothermic reaction? [1]

2. What is an endothermic reaction? [1]

3. Is burning exothermic or endothermic? [1]

4. A mixture drops from 20 °C to 12 °C. What is the temperature change, in °C? [1]

5. Is the reaction in question 4 exothermic or endothermic? [1]
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6. Give TWO examples of exothermic reactions. [2]
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7. Give ONE example of an endothermic reaction. [1]
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8. Is freezing water exothermic or endothermic? [1]
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9. Is boiling water exothermic or endothermic? [1]
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10. Why do we use a polystyrene cup rather than a glass beaker to measure temperature changes? [2]
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11. A reaction starts at 18 °C and reaches 41 °C. What is the temperature rise, in °C? [1]
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12. Three repeats gave rises of 12 °C, 14 °C and 13 °C. What is the mean rise, in °C? [1]
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13. Suggest why a hand warmer is useful for walkers but an endothermic pack is useful for sports injuries. [2]
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14. Explain why photosynthesis is endothermic. [2]
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4. Before you hand it in

"Endothermic reactions make cold."

Endothermic reactions TAKE IN energy from the surroundings, so the surroundings cool down.

"If you heat it, it must be exothermic."

Thermal decomposition needs constant heating because it is endothermic.

Getting the direction backwards: 'the temperature rose so energy went in'.

Temperature rises → energy came OUT of the reaction (exothermic).

Calling every energy change a 'reaction'.

Say 'endothermic process' or 'endothermic change' for physical changes like melting.