

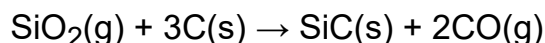
Section Self-CheckHeat Score: **0%** (0 out of 5 correct)

1. The heat content of a system at constant pressure is defined as the _____.

- A. ☒ enthalpy
- B. ☐ entropy
- C. ☐ work
- D. ☐ heat

Feedback: Enthalpy is the heat content of a system at constant pressure.

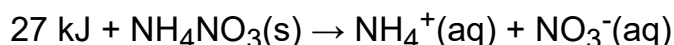
2. How much heat is absorbed in the complete reaction of 3.00 grams of SiO₂ with excess carbon in the reaction below? ΔH° for the reaction is +624.7 kJ/mol.



- A. ☐ 366 kJ
- B. ☐ 1.13×10^5 kJ
- C. ☐ 5.06 kJ
- D. ☒ 31.2 kJ

Feedback: Convert grams to moles and multiply by 624.7 to give an answer of 31.2 kJ.

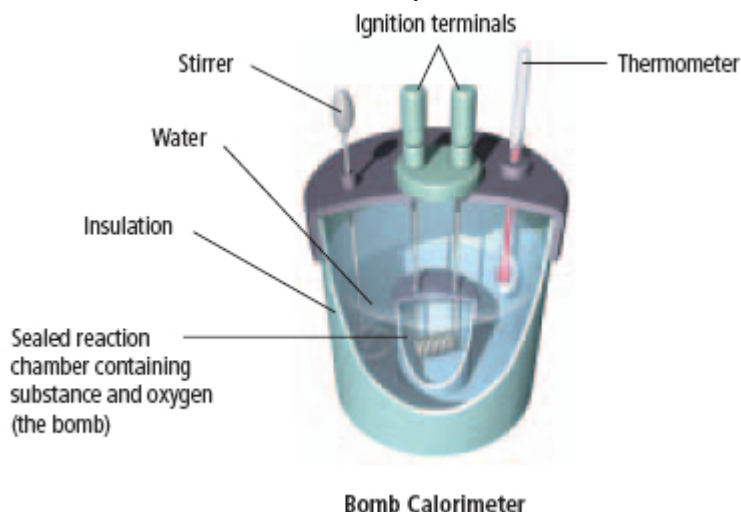
3. In the cold pack process, 27 kJ are absorbed from the environment per mole of ammonium nitrate consumed. If 50 g of ammonium nitrate are consumed, what is the total heat absorbed?



- A. ☐ 27 kJ
- B. ☒ 17 kJ
- C. ☐ 0.34 kJ
- D. ☐ 43 kJ

Feedback: Molar mass of ammonium nitrate is 80.043 g/mol. 50 grams is 0.62 moles. 27 kJ/mol x 0.62 mol = 17 kJ.

4. In the bomb calorimeter pictured, what is the function of the water?



- A. ☐ The water insulates the reaction.
- B. ☐ The water prevents an explosion.
- C. ☒ The water absorbs or provides energy.
- D. ☐ The water provides hydrogen gas for ignition.

Feedback: The water changes temperature as heat is either released or absorbed by the reacting substances.

5. 125 grams of water are placed in a foam cup. The initial temperature is 22.3 degrees Celsius. An 11.8 gram sample of metal is placed in the water at 108 degrees Celsius. The final temperature is 24.0 degrees Celsius. What is the specific heat of the metal, and what metal might the sample be?

Substance	Specific heat J/(g·°C)
Water(l)	4.184
Ethanol(l)	2.44
Water(s)	2.03
Water(g)	2.01
Beryllium(s)	1.825
Magnesium(s)	1.023
Aluminum(s)	0.897
Concrete(s)	0.84
Granite(s)	0.803
Calcium(s)	0.647
Iron(s)	0.449
Strontium(s)	0.301
Silver(s)	0.235
Barium(s)	0.204
Lead(s)	0.129
Gold(s)	0.129

- A. ☒ 0.897, aluminum
- B. ☐ 1.825, beryllium
- C. ☐ 0.449, iron
- D. ☐ 1.023, magnesium

Feedback: $c = 125 \text{ grams water} \times 4.184 \times 1.7 \text{ degrees} / (11.8 \text{ grams unknown} \times 84 \text{ degrees}) = 0.897$

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