



- 1 The lattice enthalpy of formation of some ionic compounds are shown. For each compound, both the value determined from a Born-Haber cycle and that calculated from the perfect ionic model are shown.

compound		NaCl	AgCl
lattice enthalpy of formation (kJ mol ⁻¹)	Born-Haber cycle	-771	-905
	perfect ionic model	-766	-770

- a Which of these compounds has the strongest ionic bonding? Explain your answer.

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- b Which of these compounds has the greatest covalent character? Explain your answer.

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- 2 Complete the Born Haber cycle below for calcium bromide. Complete the lines, put arrows from one stage to another, and write on the values for the enthalpy change for each step on those arrows using the data below. Use it to find the lattice enthalpy of formation of calcium bromide.

Ca(g) + Br₂(l)

CaBr₂(s)

enthalpy of formation of calcium bromide = -675 kJ mol⁻¹

1st ionisation enthalpy of calcium = +590 kJ mol⁻¹

2nd ionisation enthalpy of calcium = +1150 kJ mol⁻¹

atomisation enthalpy of bromine = +112 kJ mol⁻¹

atomisation enthalpy of calcium = +193 kJ mol⁻¹

1st electron affinity of bromine = -342 kJ mol⁻¹