Answer on Question #69855 - Chemistry - Physical Chemistry

Question:

ΔHf C2H4=12.5 Kcal

Heat of atomisation of C=171 kcal

Bond energy of H2 =104.3kcal

Bond energy of C–H=99.3 kcal

What is C=C bond energy

Solution:

To find the bond energy C = C, we need to take 2 heat of atomization of C, 2 bond energy of H2, 4 bond energy of C–H and 1 of the heat of formation C2H4:

$$2 \cdot 171 + 2 \cdot 104.3 - 4 \cdot 99.3 - x(bond\ energy\ C = C) = 12.5$$

$$x = 2 \cdot 171 + 2 \cdot 104.3 - 4 \cdot 99.3 - 12.5 = 140.9$$

So x = 140.7 Kcal.

Answer: 140.7 Kcal.