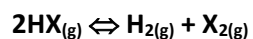


#63405 Chemistry, General Chemistry



Estimate the energy change (in kJ) for the reaction with the following X.

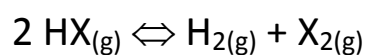
F, kJ

Cl, kJ

Br, kJ

I, kJ

Answer:



Bond energy:	H-X	H-H	X-X
For X=F	2(565)	(436)	(155)
For X = Cl	2(431)	(436)	(244)
For X=Br	2(362)	(436)	(190)
For X = I	2(299)	(436)	(151)

$$\Delta H \text{ for HF} = 2 \cdot 565 - 436 - 155 = +539 \text{ kJ/mol}$$

$$\Delta H \text{ for HCl} = 2 \cdot 431 - 436 - 244 = +182 \text{ kJ/mol}$$

$$\Delta H \text{ for HBr} = 2 \cdot 362 - 436 - 190 = +98 \text{ kJ/mol}$$

$$\Delta H \text{ for HI} = 2 \cdot 299 - 436 - 151 = +11 \text{ kJ/mol}$$

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