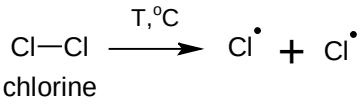
Answer on Question #42107 - Chemistry - Organic Chemistry

Question:

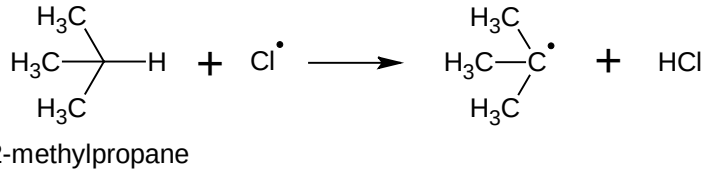
Show accurately how reaction of 2-methlypropane with chlorine at high temperature, could lead to the formation of 2 -chloro-2-methylpropane in a free radical process?

Answer:

At high temperature chlorine molecule splits into two chlorine free radicals

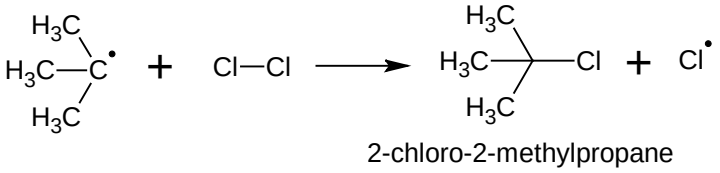
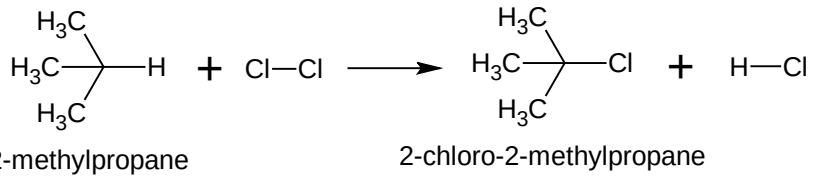


The chlorine radical attacks 2-methlypropane and detaches H resulting in 2-methylprop-2-yl free radical and hydrogen chloride



The question, which might arise is “why exactly the hydrogen in position 2 is detached, not any of other 9 hydrogens?”. It is because in such case most stable free radical is formed.

The 2-methylprop-2-yl free radical reacts with another chlorine molecule resulting in 2 -chloro-2-methylpropane and chlorine free radical formation



Overall reaction is as follows