Addition of HBr to Alkenes in the Presence of Peroxides

Mechanism

Initiation

\[
\text{H}_3\text{C} - \text{C} - \text{O} - \text{O} - \text{C} - \text{CH}_3 + \text{HBr} \rightarrow 2 \text{H}_3\text{C} - \text{C} - \text{O} - \cdot
\]

Propagation

Termination

There are other possible products

mixture of stereoisomers
Regioselectivity: Anti-Markovnikov addition.

Radical Stability: $3^\circ > 2^\circ > 1^\circ$

Only HBr. Does not have to be a peroxide, a radical initiator like azaisobutyronitrile (AIBN) works fine see below.