

Chapter 7

Understanding Strategies for Stabilizing a Carbocation or Carbon Radical (Part 2): Share Electrons Two Atoms Away

Key Concepts

AN ATOM WITH A NON-BONDED PAIR OF ELECTRONS CAN TEMPORARILY SHARE THOSE ELECTRONS WITH A DEVELOPING CARBOCATION TWO ATOMS AWAY. The most common examples are seen when CHLORINE, BROMINE, IODINE, OR MERCURY REACT WITH A PI BOND. Alternatively, BOND ELECTRONS can be transferred to a developing carbocation from two atoms away when BORON reacts with a pi bond. As boron accepts pi bond electrons, it gives a hydride ion to the developing carbocation.

What You Need to Learn, Understand, and Apply

1. When and how to share a non-bonded electron pair with a developing carbocation two atoms away.
2. How and why a cyclic ion intermediate is resolved.
3. When and how to resolve a developing carbocation by moving a hydride ion from two atoms away.
4. How and why reactions of alkynes differ from reactions of alkenes.
5. The ability to define the terms *syn addition* and *anti addition*. Also, an understanding of when each occurs.
6. The ability to determine product stereochemistry if the reaction mechanism stereochemistry is *syn* or *anti*.
7. The approach for solving synthesis problems.
8. The skills and practice needed to apply the material and to avoid common errors.