

What is the most stable Newman projection of pentane?

In a Newman projection, a molecule is viewed along a specific bond, and the atoms on the back are "hidden" behind the atoms in the front, making it easier to visualize the relative three-dimensional orientation of the atoms.

In the case of pentane, the most stable Newman projection is the one in which the molecule is viewed along the C2-C3 bond, with the methyl groups (CH₃) on the same side of the molecule, or the so-called "anti-conformation". This is the most stable conformation because the methyl groups are "crowded" on one side of the molecule, which minimizes the interactions between them and therefore reduces the torsional strain.

