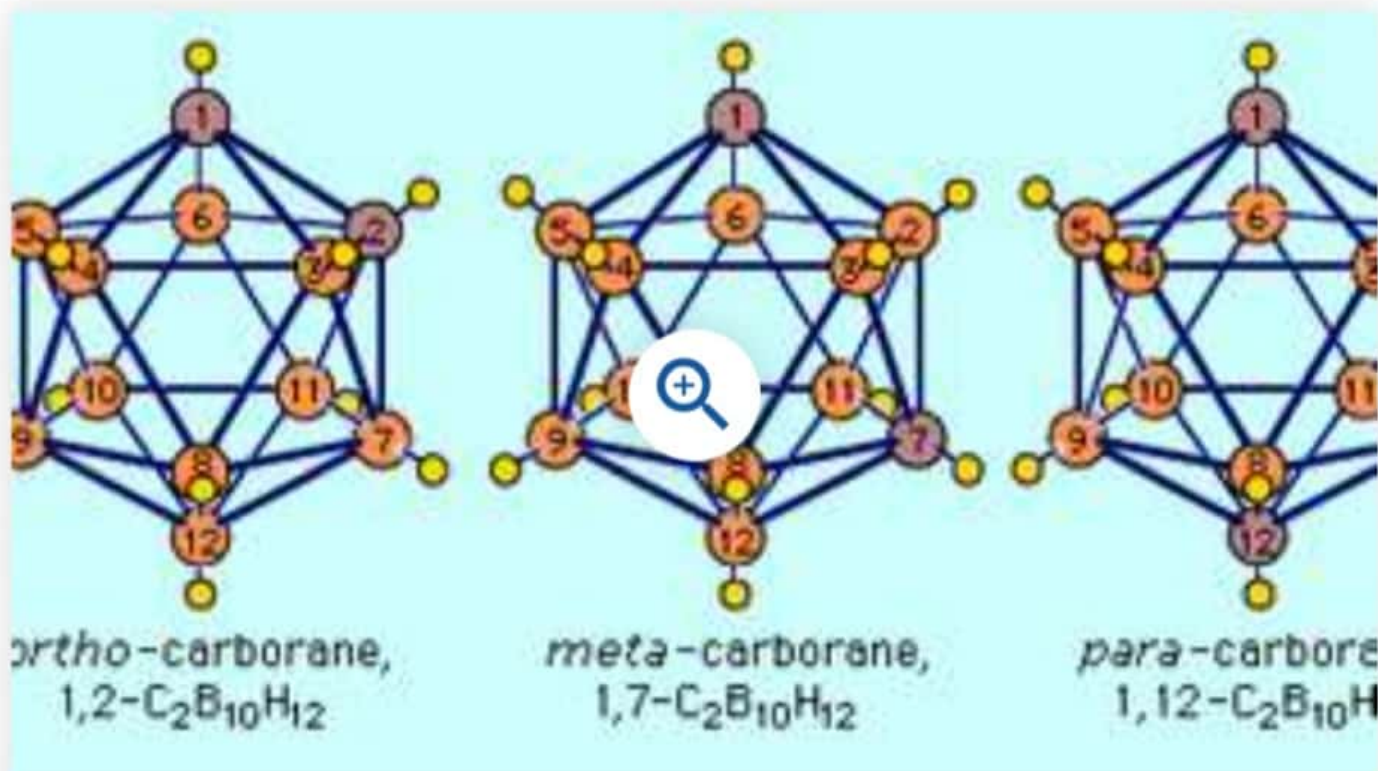


Carborane, any member of a class of organometallic compounds containing carbon (C), boron (B), and hydrogen (H). The general formula of carboranes is represented by $C_2B_nH_{n+2}$, in which n is an integer; carboranes with n ranging from 3 to 10 have been characterized.






Structure And Bonding Of Carboranes

The carboranes have polyhedral molecular structures based on networks of boron and carbon atoms, in which the carbon atoms occupy adjacent positions. As a result, the structures of carboranes and their derivatives are similar to those of the isoelectronic (possessing the same number of electrons) polyhedral boranes, and, like the boranes, they involve three-centre bonds as well as ordinary two-centre bonds. Their most significant structural feature is the covalent bonding of carbon simultaneously to five or six other atoms.



In addition, the nomenclature of carboranes employs the same structural prefixes (*closo-*, *arachno-*, etc.) as those of **borane**. The numbering of the atoms in carborane compounds begins with the apex atom of lowest coordination (i.e., with the fewest bonds), and polyhedral vertex atoms are numbered in a clockwise direction with the carbon atoms being given the lowest possible numbers. The best-studied carborane is *ortho*-carborane, $C_2B_{10}H_{12}$, made by reaction of acetylene with decaborane in the presence of diethyl **sulfide**. Its molecular structure resembles an icosahedron with the 10 boron atoms and two adjacent carbon atoms



molecular structure resembles an icosahedron with the 10 boron atoms and two adjacent carbon atoms forming the apices.