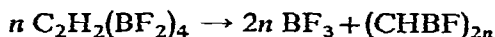
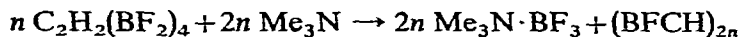


mentation pattern of the mass spectrum gave no evidence for chlorine-containing ions, and a molecular weight determination and comparison of the infrared spectrum with that of 1,1,2,2-tetrakis(dichloroboryl)ethane confirmed the product as the corresponding difluoro compound.

1,1,2,2-Tetrakis(difluoroboryl)ethane showed even higher thermal stability than the dichloro compound; after heating at 110° for 7 days, 40% of the difluoro compound remained unchanged, the decomposition following the equation



and yielding an involatile residue. Unlike the dichloro compound, reaction with trimethylamine occurred at ordinary temperatures, giving a crystalline solid, identified by its infrared spectrum as trimethylamine-boron trifluoride, and a viscous non-volatile residue; the reaction followed the stoichiometry represented by



EXPERIMENTAL*

1,1,2,2-Tetrakis(dichloroboryl)ethane and diboron tetrafluoride were both prepared from diboron tetrachloride, by reaction with acetylene and antimony(III) fluoride respectively. In a typical reaction, 1,1,2,2-tetrakis(dichloroboryl)ethane (0.56) and diboron tetrafluoride (1.53) gave after 1 h at 20° diboron tetrachloride (0.64), boron trifluoride (0.20), unchanged diboron tetrafluoride (0.61) and a product (0.35) involatile at -45°. The latter after degradation with alkali and calcium nitrate gave on heating ethane (0.32), fluoride (2.66, as CaF_2), boron (1.38), giving a ratio B/F/CH = 1/1.94/0.45. Molecular weight by vapour density gave 225 ± 5 ($\text{B}_4\text{F}_8\text{C}_2\text{H}_2$ requires 222). Decomposition of $\text{B}_4\text{F}_8\text{C}_2\text{H}_2$ (0.18) gave, after 7 days at 110°, boron trifluoride (0.21), unchanged compound (0.08) and a solid residue of composition BFCH. Reaction of the compound (0.90) with trimethylamine (excess) gave, after 1 day at 30°, uptake of 2.0 trimethylamine, with formation of $\text{Me}_3\text{N} \cdot \text{BF}_3$ (sublimate, infrared spectrum) and a viscous non-volatile residue.

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* Units are mmole unless otherwise stated.