

Behavior of 1,3-Di(*tert*-butyl)-2,4-bis(tetramethylpiperidino)-1,3,2,4-diphospha-diboretane towards Boron Halides and Adduct Formation of a Bicyclo[1.1.0]diphosphadiboretane with Tris(pentafluorophenyl)borane [1]

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Z. Naturforsch. **61b**, 265 – 274 (2006); received December 8, 2005

Dedicated to Prof. Dr. H.-G. Schnöckel on the occasion of his 65th birthday

While the diphosphadiboretane (*t*BuP=Btmp)₂, **1**, reacts with boron trihalides BX₃ (X = Cl, Br, I) with BN cleavage producing a number of unidentifiable products, a new tricyclic BP ring system **2**, containing B₃P₃, PB₂C₂ and C₆ rings, results from the combination of PhBCl₂ and **1**. B-Chlorocatecholborane and **1** give access to the diborylphosphane **3**, tmpBCl-P*t*Bu-cat (cat = C₆H₄O₂B). This shows that the selectivity of the reactions increases as the Lewis acidity of boron halide decreases. The structure of compounds **2** and **3** were determined by X-ray structure analysis. The bicyclic (tmpBP)₂ **4** forms no adducts with MeI, CF₃SO₂Me or Ph₃C(SnCl₅). However, it adds B(C₆F₅)₃ to give **10**, the first BX₃ adduct of this bicycle that is fully characterized including its molecular structure.

Key words: Diphosphadiboretanes, Bicyclodiphosphadiboretane, Reactivity, NMR Spectra, X-Ray Structure Analysis