

Zirconium Reagents for Organometallic Synthesis. Crystal Structures of $\text{ZrCl}_4 \cdot 2\text{Et}_2\text{O}$ and $(\text{Et}_2\text{N})\text{ZrCl}_3 \cdot \text{Et}_2\text{O}$

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Reaction of 3 equivalents of $\text{ZrCl}_4 \cdot 2\text{Et}_2\text{O}$ (**1**) with 1 equivalent of $(\text{Et}_2\text{N})_4\text{Zr}$ in diethyl ether readily affords crystalline $(\text{Et}_2\text{N})\text{ZrCl}_3 \cdot 2\text{Et}_2\text{O}$ (**2**) in almost quantitative yield. The product was characterised by elemental analysis and by ^1H , ^{13}C NMR, and MS techniques. The reactivity of this reagent towards C-H acidic compounds has been studied using cyclopentadiene as a C-H acid. The crystal structures of both **1** and **2** have been determined by X-ray diffractometry. The coordination polyhedra reveal a nearly perfect octahedral geometry with a *trans* Et_2O ligation for **1** and a *cis* one for **2**.