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# The Synthesis and Isolation of Mono-BOC-Protected 1,4-Phenylene Diamine and Further Reaction with Hexamolybdate

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**THE SYNTHESIS AND ISOLATION OF MONO-BOC-PROTECTED  
1,4-PHENYLENE DIAMINE AND FURTHER REACTION WITH  
HEXAMOLYBDATE**

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When reacting unprotected diamines with polyoxymetalates, a mixture of di-, mono-, and unsubstituted products is obtained. A simple aromatic diamine, 1,4-phenylene diamine, was used to investigate a method through which a mono-BOC-protected diamine could be synthesized and isolated for further reaction with the hexamolybdate ion to obtain a mono-substituted product. The 1,4-phenylene diamine was purified by sublimation and the purified diamine was then reacted in a 1:1 mole ratio with di-*tert*-butyl dicarbonate to mono-protect the diamine. According to GC-Mass Spectrometry, the acetonitrile-soluble products of this reaction were 97.7% mono-protected and 2.0% di-protected. The mono-protected product was then purified via column chromatography with final percent yields of 89.1% and 81.5% in two trials. Purity was verified by GC-Mass Spectrometry and H-NMR. The mono-protected 1,4-phenylene diamine was reacted with the hexamolybdate ion to yield a mono-substituted 1,4-phenylene diamine.