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Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

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To cite this Article Karaghiosoff, K. and Jochem, G.(1989) 'P, Se-Heterocycles From the Quasi-Binary System PhP/Se', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 41: 3, 460

To link to this Article: DOI: 10.1080/10426508908039739

URL: <http://dx.doi.org/10.1080/10426508908039739>

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P,Se-HETEROCYCLES FROM THE QUASI-BINARY SYSTEM PhP/Se

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Abstract Contrary to statements in the literature the PhP/Se system does contain a compound with a PhP/Se ratio lower than 1. The reaction of pentaphenyl-cyclopentaphosphane and elemental selenium yields depending on the molar ratio the heterocyclic compounds $(\text{PhP})_4\text{Se}$ (1), $(\text{PhP})_3\text{Se}_3$ (2), or $(\text{PhP})_2\text{Se}_4$ (3). 1, 2, and 3 are yellow to orange-red crystalline stable compounds. Their molecular structures, as shown by the ^{31}P - and ^{77}Se -NMR data as well as by the X-ray crystal structure determination of 2, parallel those of the corresponding sulfur derivatives. Nucleophiles add easily to the phosphorus in 3 splitting the P_2Se_2 -ring.