Journal of Organometallic Chemistry, 262 (1984) C7
Elsevier Sequoia S.A., Lausanne — Printed in The Netherlands

Explosion warning

EXPLOSIONS WITH THE $(BH_2CN)_n$ OLIGOMER

BÉLA GYŐRI*, JÓZSEF EMRI and ISTVÁN FEHÉR

Institut of Inorganic and Analytical Chemistry, Kossuth University, H-4010 Debrecen 10 (Hungary)

(Received December 8th, 1983)

In a recent paper on the preparation and properties of novel cyano and isocyano derivatives of borane and the tetrahydroborate anion we described the preparation of the $(BH_2CN)_n$ oligomer [1]. We successfully prepared this material on several occasions without problems by the procedure A2 described in our paper. Recently however when this product, isolated by recrystallization of a syrupy residue, was being scraped off the walls of a Schlenk vessel under N_2 with a metal spatula, it exploded after 10—15 minutes. The explosion fragmented the vessel and was accompanied by a fire.

Subsequent experiments, using a previously isolated specimen of $(BH_2CN)_n$ showed that the substance is sensitive to mechanical shock. Upon grinding small amounts of the substance in a porcelain mortar it decomposes into a dark-brown product with a barely audible crack. On heating in N_2 it decomposes violently at around 230°C. On heating in an open test tube it undergoes a slow reaction at 100—120°C, presumably with O_2 and/or H_2O, and the surface of the melt becomes covered by a white crust. The amount of the latter increases when the temperature is raised further, but no explosion occurs even up to 250°C. No explosion was observed on heating with concentrated HCl, concentrated H_2SO_4, 2*N* NaOH, or 33% H_2O_2 but a mixture of $(BH_2CN)_n$ with $NaClO_3$ exploded violently when mildly agitated mechanically.

It is evident that it may be dangerous to prepare larger amounts of $(BH_2CN)_n$ in solid form. For preparative work a solution in Me_2S should be used, as in procedures B and F in our paper [1]. Such a solution can be made by our procedure A2.

Reference

1 B. Győry, J. Emri, and I. Fehér, J. Organomet. Chem., 255 (1983) 17.