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High Coking Polymers from Interaction of Diamino- and Dihydroxy-Aromatic Compounds

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ABSTRACT

Mixtures of 1, 5-diaminonaphthalene ($C_{10}H_{10}N_2$) and 1, 5-dihydroxynaphthalene ($C_{10}H_8O_2$) interact when heated and produce cokes in yields two to three times greater than expected. The cokes contain varying amounts of nitrogen (because of the nitrogen present in the 1, 5-diaminonaphthalene) and show significant amouts of nitrogen-induced puffing between 1000° and 3000°C. Graphites prepared from these cokes exhibit unexpected properties in that the bulk densities, flexural strengths, Rockwell Hardnesses, and especially coefficients of thermal expansion fall far below the predicted values over the entire mixture range. Unusual and very rapid changes in these properties occur when the starting mixtures contain between 95 and 100 w/o 1, 5-dihydroxynaphthalene, i. e., between 0 and 5 w/o diaminonaphthalene.