

PHYSICAL CHARACTERISTICS OF GRAPHITES CONTAINING BORON

by

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Three petroleum cokes with different degrees of graphitizability were milled into 45 - 90% through 200 mesh particles. The coke particles were mixed with coal tar pitch and each of the following boron source materials: boron carbide, hexaboron silicide, boric oxide, and calcium boride. The boron concentration was varied from 0 - 7.5%. Five-inch diameter rods were extruded, baked at 750 C, and graphitized at 2200, 2600, 2750, or 3000 C. Materials containing 7.5% boron and heat treated to 2200 C had characteristics equivalent to non-boronated materials heated to 2750 C. Oxidation resistance, strength, and thermal expansion coefficients were improved by the introduction of boron. The degree of improvement depended on the heat-treatment temperature and the amount of boron introduced.