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Too little, too late: the geochemistry of a 1773 Philadelphia porcelain openwork basket

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Abstract

A dated (1773) openwork basket labelled “PHILADELPHIA” attributed to the Bonnin and Morris factory has a lead-bearing, silicious “aluminous” calcic (S-A-C) composition that contrasts with the phosphatic (bone ash) porcelains known to have previously been made during the mid-1760s to early 1770s in what is now the United States. The basket was underfired and so contains relics of a flint (Pb) glass flux, but kiln temperatures were nonetheless sufficient for subsolidus pseudowollastonite and anorthite to have been resorbed, implying that the duration of firing (soaking) near peak kiln temperatures was insufficient to ensure thorough vitrification. During cooling, liquidus pseudowollastonite and silica polymorphs (but not anorthite) formed, showing that the melt was confined to the tridymite “pseudowollastonite cotectic above the T_{rd} “Wol” “An eutectic (1170 °C) in the SiO_2 “ Al_2O_3 “CaO system. Rapid cooling is also indicated by quenched silica polymorphs in the relict glass particles.

Although Bonnin and Morris employed some former Bow (London, c. 1743–74) workers, the S-A-C wares initially produced by this factory are compositionally distinct from the 1773 basket, which in this regard more closely resembles the body and glaze of a reputed Chelsea triangle-period (London, c. 1745–49) vessel. Regardless of how they obtained this technology, it is ironic that Bonnin and Morris chose to abandon phosphatic pastes in favour of what in Britain had become an obsolete formula.



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Keywords

Philadelphia porcelain; Bonnin–Morris composition; Glass; Geochemistry

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