

THE FAIENCE MANUFACTURE *LE BOIS D'EPENSE* (NORTH-EASTERN FRANCE, 18/19TH CENTURY)

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The french factory *Le Bois d'Epense* was an important tin-glaze pottery production site in the years 1735-1742 and 1764-1848, with almost 200 workers at the top of its activity. We present the analytical results for 56 faiences (= tin-opacified lead glazed earthenware), 28 samples of technical ceramic (saggars and spacers) and 6 local clays. Analytical techniques were optical microscopy, X-ray fluorescence (XRF), X-ray diffraction (XRD) and scanning electron microscopy, coupled to an energy-dispersive X-ray spectrometer (EDS).

As shown by XRF analysis, the faience is very homogeneous and has a typical calcareous faience body (16-24 wt.% CaO). No chemical difference can be evidenced between the biscuits and the faiences with a "grand feu" or an enamel decoration. The products from this site can easily be distinguished from the actually known french faience reference groups. The spacers were made from the same paste as the faience, but the saggars with an imported refractory clay, rich in Al₂O₃. For the faience body, a mixing of two local clays has been reported in a paper from 1877. However, the prospected local Cretaceous (Middle Albian) clays never exceed 12 wt.% CaO. An addition of a CaO-rich material is undoubtedly necessary to reach the 16-24 wt.% CaO of the faience. This is not a local marl, but most probably a very pure chalk from the Champagne. Firing temperatures were inferred by XRD and lie < 950°C for the biscuits and between 950-1050°C for the glazed pieces, indicating a two chambered kiln. The quality of the tin glaze is in general good, showing rare rounded quartz crystals, very few newly crystallized phases (K-feldspars, cristobalite?) and bubbles. Contrasting, the cassiterite crystals are inhomogeneously dispersed, forming clusters. The absence of any glaze-body interface is consistent with the application of the liquid glaze to an already fired body. Area measurements show that all tin opacified glazes can be classified as SiO₂-PbO glazes (~ 80 wt.%) containing about 9 wt. % SnO₂, with other oxides in concentrations < 5 wt.% . Spot analyses of the glass matrix indicate a much lower tin oxide amount of about 2 wt.% as compared to the area measurements.