

## **HIGH-MG FAIENCES FROM GRANGES-LE-BOURG (HAUTE SAONE, FRANCE)**

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Usually, French tin-opacified lead glazed (enamelled) pottery is poor in MgO. However, there are some MgO-rich (H-Mg) faience pieces whose manufacturing technique and origin remain unclear, despite the fact that high MgO-contents can be observed in some pieces attributed to Varages (southern France). H-Mg composition can be caused by the use of dolomitic or montmorillonitic raw material, or the admixture of ground soapstone, magnesite or dolomite to a MgO-poor clay.

Archaeological excavations of the brickworks from Granges-le-Bourg started in 2002. According to archive entries, they were active from the 16<sup>th</sup> to the 19<sup>th</sup> c.. Faience waste was found from an unknown, not yet documented late 18<sup>th</sup>/early 19<sup>th</sup> c. production. In Granges-le-Bourg, coarse, as well as fine ceramic was therefore produced simultaneously. Archaeometric analysis included 40 faiences (biscuit and enamelled pieces), 21 samples of technical ceramic (saggars and spacers), 5 bricks or tiles, 7 clays and 3 frits. Analytical techniques were optical microscopy, X-ray fluorescence, X-ray diffraction and scanning electron microscopy, coupled to an energy-dispersive X-ray spectrometer (EDS).

The faience is rich in MgO (5-10 wt %) and can be distinguished clearly from known reference groups. It represents the first original French H-Mg faience reference group. Astonishingly, there is a chemical match between the spacers and the faience, while the saggars and the bricks and tiles are magnesium-poor. Local Triassic (Anisian) marls contain much dolomite and are chemically similar to the H-Mg faience. As shown by vertical profiles of two raw materials outcrops, there is a decarbonatisation towards the surface. The top layers correspond chemically well to the MgO-poor ceramic group. Firing temperatures lie < 800°C for the biscuits and between 950-1050°C for the enamelled pieces, indicating a two chambered kiln. The quality of the tin glaze is not very high, showing many rounded quartz crystals, bubbles and inhomogeneously dispersed cassiterite crystals, forming clusters. No reaction zone between glaze and body was observed. A

coating of either tin glaze (with significantly less tin oxide than the faience pieces) or lead glaze has been applied to the interior of the saggars. For these objects, a glaze-ceramic body interface has been observed only for the lead glaze.