

“Soapy rock” in 18th Century ceramic pastes: talc or serpentine?

Walta-Anne Rainey

Department of Geology, Saint Mary's University, Halifax, NS B3H 2C9

Some early (18th century) British porcelains have magnesian compositions reflecting the use of Cornish “soapy rock” in their pastes. As a consequence, the fired wares contain enstatite and/or diopside. Traditionally, the “soapy rock” has been interpreted to be steatite, a talc-rich rock derived from the hydration of peridotite from the Lizard peninsula. There is no doubt that narrow veins of steatite occur in the serpentine-rich rocks in this area. However, contemporary accounts record the fact that workmen had trouble separating the two rocks, to the point that “... they ... received instruction lately not to be so exact in ... separating it.” Furthermore, Josiah Wedgwood noted that he examined this rock, collectively referred to as “soap rock,” “from its softest state to a state of induration sufficiently hard for making the roads with” It therefore seems plausible that serpentine as well as talc were included in magnesian pastes. Indeed, there is evidence that some potters do not distinguish these minerals even today – analysis of “talc” purchased from

a pottery supply company proved to be mostly antigorite. In order to test the likelihood that serpentine was included in these wares, controlled kiln-firing experiments were performed on pastes mixed according to recipes calculated from the composition of archaeological potsherds from 18th century British porcelain factories, as well as an ideal (stoichiometric) quartz-calcite-“talc” mixed in proportions required to form only diopside. Preliminary results show that, during firing of a quartz-calcite-serpentine (talc, diopside/endiopside) paste at 1000°C, rims of akermanite ($\text{Ca}_2\text{MgSi}_2\text{O}_7$) start to form on calcite after approximately 40 minutes, and subsequently on the other phases. Forthcoming firing experiments will be conducted to determine if the akermanite breaks down to yield pyroxene(s) at temperatures approaching the vitrification point ($T \sim 1250^\circ\text{C}$) of this material.