

NEW ARCHAEOINTENSITY DATA FROM ITALIAN ARCHAEOLOGICAL SITES

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Four kilns and a collection of baked bricks from Italian archaeological sites have been studied for archaeointensity determination. Most of the sites are dated based on archaeological information and their dates range from 500 to 800 AD and 1500 to 1700 AD. Rock magnetic studies identify magnetite, Ti-magnetite and hematite as the main magnetic minerals. Magnetic susceptibility behavior versus temperature shows a good reversibility of the heating and cooling curves. Archaeointensity experiments were performed using the Thellier modified by Coe method. Corrections for the anisotropy of thermoremanent magnetization (TRM) upon the archaeointensity values have been applied after the determination of the TRM anisotropy tensor in each specimen. In some cases the effect of TRM anisotropy is important and the corrected and uncorrected mean intensities differ by almost 9 %. The effect of cooling rate on the TRM acquisition was also determined. This later is very low in all samples. For one kiln, archaeointensity determination was unsuccessful; for all studied samples low-quality, non linear Arai plots were obtained and the results were rejected. For the rest of sites, 4 to 13 samples were used to calculate the site mean intensity and in all cases high quality results were obtained. These results, even if not numerous, contribute to the Italian archaeointensity dataset that includes 102 previously published data, from which however only 15 come from archaeological material. All the other Italian archaeointensity data come from volcanic rocks and cover the time interval from 1169 to 1983 AD. The time period 100-1000 AD was previously completely uncovered by data. Two of the new results presented here, coming from two kilns dated on 6th and 8th century AD, are the first data for this period and give virtual axial dipole moments of $10.4 \cdot 10^{22} \text{ Am}^2$ and $12.4 \cdot 10^{22} \text{ Am}^2$, respectively. Clearly more data are still needed in order to describe the geomagnetic field intensity variation in Italy during the last 2000 years.

Archaeointensity, archaeological material, Italy

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