

**Gold enrichment in Staffordshire Hoard K660: results of SEM-EDX analysis**

Object Type Hilt collar  
Date 610-630

Decoration Filigree  Glass   
Garnet  Other



SEM-EDX analysis was undertaken on both the interior and exterior gold sheets.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Base sheet exterior surface	8	Average	74.6	24.6	0.8
		Standard Deviation	0.71	0.72	0.14
Base sheet exterior sub-surface	16	Average	62.9	33.6	3.5
		Standard Deviation	1.27	1.12	0.19
Base sheet interior surface	8	Average	57.2	39.5	3.3
		Standard Deviation	1.72	1.75	0.13
Base sheet interior sub-surface	22	Average	57.9	38.4	3.7
		Standard Deviation	1.58	1.47	0.17

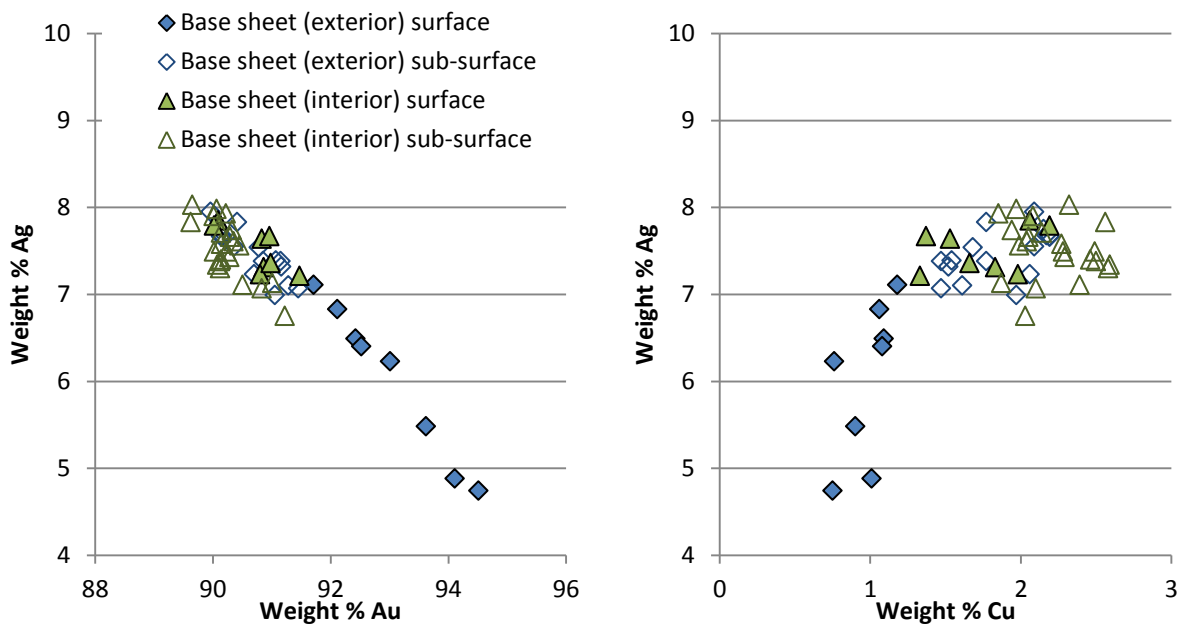
SEM-EDX surface and sub-surface compositions for each component analysed (the results are normalised). This analysis was carried out as part of the gold enrichment study. For full details of methodology and associated results see report PR07444-10 and PR07444-15

The analysis revealed a c.9 wt% loss of silver from the surface of the exterior base sheet (a difference of c.27% from surface to core), which is indicative of treatment to deliberately enrich the gold colour of the metal. Only copper and small amounts of silver are normally lost from the surface during burial. The interior base sheet had a loss of copper from the surface, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment.

Comparison of the sub-surface compositions of both sheets suggests that they were made from the same, or a similar, gold alloy. The exterior sheet has been treated to create an even more gold enriched surface while the interior sheet has not been treated.

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# SEM-EDX analysis of K660



Plots of gold vs silver and copper vs silver contents, based on SEM-EDX analysis, showing the differences between the sub-surface and surface analyses.

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