

ANCIENT MONUMENTS LAB REPORT NO 4355

ANALYSES OF COPPER ALLOY OBJECTS AND WASTE FROM KINGSHOLM, GLOUCESTER

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The material examined comprised two enamelled brooches from site 81/73, and three military fittings and seven groups of scrap and waste metal from site 44/72. All the finds were analysed qualitatively by energy dispersive x-ray fluorescence (XRF). The table summarises the analytical results. In most cases tin, zinc and lead were detected in addition to copper, but the proportions varied widely, allowing the individual objects to be described as being of a certain alloy type. Brasses contain mainly copper and zinc, bronzes are basically copper-tin alloys while gunmetals contain significant amount of both tin and zinc in addition to copper. Some alloys also contain more than a few percent of lead; they are described as leaded alloys.

The reason for carrying out the analyses was to check the hypothesis that most military fittings were made of brass. The sample made available was insufficiently large to allow firm conclusions.

The scrap metal is of a wide range of compositions suggesting that many different sorts of objects were being made or repaired. It will be interesting to compare the results with those obtained from the crucible fragments.

The two brooches are of different alloys. The disc brooch (cat no 4) is of a type thought to be of British manufacture so its composition comes as no surprise. Equally the other brooch (cat no 5) is likely to have had a continental origin so the fact that it is made of a zinc-containing alloy also conforms to the expected pattern. The enamel in this object is opaque turquoise with one surviving black spot (cf catalogue entry).

TABLE OF RESULTS

Object Ref	Catalogue No	Alloy	Description of scrap
<u>Site 44/72</u>			
120 303	7	brass	
15 69	8	gunmetal	
2A 5	9	brass	
2A 8		bronze/gunmetal	dribble
2A 81		brass	dribble
15 74		bronze	scrap sheet metal
33 311		leaded bronze	lump (? as cast)
44 177		copper	strip of sheet metal
		brass	3mm thick plate
		copper	wire/rod
		brass	? buckle cf Cat No 11
52 312		brass	offcut of square section bar
		bronze	dribble
95 308		leaded bronze	fragment of object ?
		leaded bronze	fragment of object ?
<u>Site 81/73</u>			
2 76	5	leaded gunmetal	
2 79	4	bronze	