Analysis of Medieval 'Pewter' Objects from the Museum of London

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The lead-tin alloys used to make certain types of medieval 'pewter' objects, and in particular tokens and pilgrim badges, have been found to fall into four compositional groups (1, 2). The groups reported were:

1466

- a) Unalloyed lead (or 'pure' lead) lead with traces only of other elements
- b) 50% lead/50% tin about 50% lead and 50% tin
- c) Eutectic about 62% tin and 32% lead
- d) Tin tin with, at the most, minor amounts of lead and traces only of other elements.

In the present work it was assumed that the objects analysed fell into one of these groups and that the objects contained only lead and tin in significant quantities.

Five types of medieval 'pewter' objects, tokens, blanks, a coin, pilgrim badges and seals, were analysed using energy dispersive x-ray fluorescence. The objects were analysed in the as received condition which, in most cases, involved analysing a patinated surface and so a fully quantitative analysis was not possible. However by comparing the results for objects of unknown composition with those for objects which had been analysed quantitatively (1, 2) an estimate of the composition of the objects which had not previously been analysed could be obtained. This was of sufficient accuracy (estimated error $\pm 2\%$) to place almost all the objects of unknown composition into one of the four groups. The results, which are discussed below, are given in the appendix.

1) Tokens

Two groups of tokens were analysed, one from 11th century contexts and the other from 13th century contexts. The 11th century tokens were all unalloyed lead whereas the 13th century tokens all fell into the eutectic group except 2285/2514 which was of the 50% lead/50% tin composition.

No other results for 11th century tokens were available for comparison, but the results for the 13th century tokens are consistent with previous results for tokens from Swan Lane. The majority of analysed 13th century tokens fall into the eutectic group, with occasional examples having any of the other three compositions (1).

2) Blanks

Of the four 13th century blanks analysed, three were unalloyed lead and one, 2358/2831, was of a composition intermediate between the 50% lead/50% tin and the eutectic groups, so this blank might belong to either group.

Only 2358/2831 corresponds to the usual composition of 13th century tokens, but tokens from the 14th century (1) and 11th century (this work) are often lead. It is likely that either the lead blanks are earlier or later than their context dates would suggest or that they were not connected with token production.

1

3) <u>Coin</u>

The 11th century coin, 2779/4064, was unalloyed lead, as were the 11th century tokens.

4) <u>Pilgrim Badges</u>

The two St Thomas a Becket pilgrim badges were compared with a similar style St Thomas a Becket pilgrim badge (80.246/2) known to be of the 50% lead/50% tin composition (2). Both the badges had eutectic composition, but the result was not unexpected as 6 out of 7 mid-late 14th century pilgrim badges analysed by Dr Skinner (2) had the eutectic composition, and only 80.246/2 had the 50% lead/ 50% tin composition.

The results are therefore consistent with previous work, but they do not provide any evidence as to whether or not the three badges were likely to have been produced in one workshop.

5) <u>Seals</u>

Both 13th century seals were tin, although 446/2018 contained minor amounts of lead. This contrasts with the composition of tokens of the same date which were mainly of the eutectic composition.

References

- 1) Skinner, Anne. "Medieval 'pewter' tokens from the Museum of the City of London", Unpublished.
- 2) Skinner, Anne. "Medieval pilgrimage souvenirs and livery badges from the Museum of the City of London", Unpublished.

Obje cc No	ct Context	Орјест Туре	Site	Context Date	Estimated % Pb	Composition % Sn	Composition Type
3618 3617 3392 3614 3615 3616 2222 2284 2200 2295 2298 2291 2386 2005	6978 6978 6978 6978 6978 2278 2544 2276 2291 2591 2591 2591 2591	Token Token Token Token Token Token Token Token Token Token	Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate Billingsgate	11th century 11th century 11th century 11th century 11th century 11th century 13th century 13th century 13th century 13th century 13th century 13th century 13th century 13th century 13th century	100 100 100 100 100 39 39 39 41 40 38 38 38 39	0 0 0 0 61 61 61 59 60 62 62 61	Unalloyed lead Unalloyed lead Unalloyed lead Unalloyed lead Unalloyed lead Unalloyed lead Eutectic Eutectic Eutectic Eutectic Eutectic Eutectic Eutectic Eutectic Eutectic
2505 3088 2299 2358	2578 5756 2277 2831	Blank Blank Blank Blank Blank	Billingsgate Billingsgate Billingsgate Billingsgate	13th century 13th century 13th century 13th century 13th century	100 100 100 43	0 0 0 57	Unalloyed lead Unalloyed lead Unalloyed lead 50% lead/50% tin
2779	4064	Coin	Billingsgate	11th century	100	0	Unalloyed lead
A14581/1 BW B83	-	Pilgrim Badge Pilgrim Badge	? ?	Late 14th C Late 14th C	35 33	65 67	Eutectic Eutectic
446 Reigate Seal	2018 -	Seal Seal	? ?	13th century 13th century	5 trace	95 99	Tin Tin

<u>Appendix</u> - Composition of 'pewter' tokens from Billingsgate and other medieval 'pewter' objects

* High levels of copper and iron were also detected on analysing this token. This was assumed to be due to surface contamination.