

## Slags from Llanelen

**Summary:** *The slags are represented by small, abraded fragments dominated by pieces of tapped bloomery slags. One small fragment of iron ore is present. This assemblage is likely to be residual, and may have been transported from its point of origin by agricultural activity. Coal and associated burnt residues also occur and will be unrelated to the smelting. The coal might be associated with smithing, but in the absence of smithing slags is just as likely to be domestic in origin.*

### Material

A total of approximately 1.3kg of material from 8 contexts was submitted. The compositions of these assemblages is summarised in Table 1.

context	slag	coal	comments
D1	795g	8 frags	10 pieces (710g) tap slag, 1 piece (65g) possibly not tap slag, 1 piece (20g) heavily corroded nailhead
E1	135g		5 pieces all tap
E10	105g		7 pieces slag, 1 daub, 1 goethite ore
E11	35g		2 pieces stone, 2 pieces tap, 2 pieces furnace/hearth slags?
E15	15g		2 pieces probable tap slag
E3	15g		3 pieces all tap
E34	120g	1 frag	8 pieces, larger certainly, smaller probably tap slag
F1	55g		tap slag, 1 piece
total	1275g		

Table 1. Summary of examined material

The size of the slag fragments typically rather small (the average is <30g), so certain identification of many of the pieces is impossible. In addition many of the pieces are heavily weathered and abraded.

All larger pieces where identification is reasonably certain were fragments of tapped slag from bloomery iron-making. Most of the smaller pieces were entirely compatible with also being tapped iron-making slags. Only a very few fragments (e.g. E11) were reasonably certainly not tapped slags, and for these an origin either as a furnace slag in iron-making or as hearth slag within a smithing hearth is possible. There were no pieces firmly indicative of smithing.

There were several fragments of coal, or coked residue. These pieces would not form part of the iron-making process (coal was not used in the bloomery furnace), although coal was used from the Roman period onwards in smithing. It should be indicated, however, that such detritus is equally likely to be of domestic origin.

One small piece (5g) of goethite iron ore was present in the material from E10. The ore as a small scale botryoidal texture, and contains no visible gangue minerals.

## **Discussion**

The ore fragment may provide an indication of the raw material being smelted, but it should be noted that iron ore fragments are often released from the Carboniferous limestone during its karstic weathering, so are common particles in the soil of areas where ore occurs. Although there are no known iron-ore occurrences at Llanelen, this possibility should be borne in mind. The small scale features of the ore lump suggest that it was derived from a very small vein, increasing the likelihood of a natural origin.

The smelting slags recovered are all small, abraded and weathered. This strongly suggests that they are residual. The slags are not easy to date. At least one lump shows that tapping was undertaken into a relatively steep sided pit. This morphology is easily paralleled among Roman and earlier Medieval material. In later Medieval times (say 14<sup>th</sup> century onwards) the size of slag flows increases markedly and produces slags with a rather different texture and morphology. In summary, this material is most likely to be 1<sup>st</sup> - 13<sup>th</sup> century, but is probably significantly older than the context in which it was found. The material bears good comparison with Roman material recovered from Medieval ploughsoils on other sites, though the age difference does not necessarily have to be as great as this.

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