

Metallurgical residues from Debenhams, 1-12 Magdalen St., Oxford (NDB99.33)

Summary Report

The slag collection from this site is a coherent, if small and fragmentary, series of residues from iron smithing. Taken as a whole they are representative of the range of residues produced by blacksmithing in a clay-lined hearth with charcoal as fuel. An almost complete smithing hearth cake is represented in (6047) and fragmentary material of a very similar nature from (1050) and (7085). Pieces of hearth lining are seen in (1018), (5030) and (7085). More amorphous iron slag and contorted vitrified debris were recovered from (1050) and (5030) respectively are also compatible with origin in a smithing hearth. The sediment adhering to one slag piece (5032) and the fabric of one piece of hearth lining (7085) contained small fragments of flake hammerscale.

The weight (345g) of the almost complete smithing hearth cake from (6047) is well within the range of such cakes produced during blacksmithing (typically 150-400g), and significantly less than for those typically produced during bloomsmithing. The high density of both the complete cake and the cake fragments, together with the substantial amounts of corrosion produced from metallic iron within the slags, suggest that the blacksmithing operation involved considerable loss of iron to the hearth. High iron loss would tend to be associated with tasks involving considerable heating, often associated with fire welding, rather than lower temperature activities. The small amount of material (the material present in this collection would represent the residues from only 1 or 2 days work) produced by these contexts might be indicative that the material is largely residual, a possibility tentatively supported by the occurrence of the more fragile residues, lining fragments, in the context with one of the older spot date ranges (7085).

Catalogue

NDB99.33 (1018), 5g, 1 piece

(area 1: 12th-18th C levelling)

Contorted piece of vitrified hearth wall. Wall contains pieces of lime up to 6mm, and similar material appears within the vitrified surface. The wall is fired to a brick red colour, the vitrified material is superficially black over grey vitrified lining. The piece is slightly magnetic.

NDB99.33 (1051), 150g, 6 pieces

(area 1: ditch 1050, sealed C10-12)

Broken, highly corroded, magnetic iron slags, including at least two fragments of dense slag similar to others in the collection. Other pieces show iron and lime cementation of surrounding sandy sediment – which appears free from metalworking residues, but which includes mineralised moulds of plant debris. All these fragments might be from a single original piece broken during recovery. The dense slags are vesicular, in an irregular manner, including some large amorphous cavities up to 12mm across. The large cavities probably occur close to the top of the original slag, which probably represents a smithing hearth cake or cakes. This suggestion is supported by the patches of iron corrosion representing remobilisation of metallic iron inclusions.

NDB99.33 (5032), 85g, 2 pieces

(area 2: well 5030, sealed, C12)

One piece is a contorted ball of vitrified lining material. The core of the material is a vesicular grey slag, which is coated by a glassy layer with streaks of pale glass suggestive of fuel-ash fluxing. One end of the material has two pendent prills of denser slag which are more strongly magnetic than the remainder. The second piece is a strongly corroded, highly magnetic, slag piece with accreted sediment. The enclosing sediment includes a few small fragments of flake hammerscale. The slag includes abundant tiny fragments of charcoal.

NDB 99.33 (6047), 345g, 1 piece

(watching brief: pit/well C11-13)

Almost complete dense smithing hearth cake, 8.5cm longitudinally by 10cm wide with a maximum thickness of approximately 3.5cm. Upper surface shows vitrified surface containing sand grains, and a prominent quartz pebble (13mm) in a raised zone 5cm longitudinally by 7.5cm wide. Irregularly dimpled lower surface, not indicative of contact with the hearth floor, with some slag prills descending near the wall.

NDB99.33 (7085), 155g, 4 pieces*(watching brief pit/well C9-11)*

Two pieces are of dense smithing hearth cakes; they are very similar, and could be from same cake. Abundant iron corrosion shows the high original content of metallic iron. Two pieces are of vitrified hearth wall. Iron corrosion is present on the vitrified surfaces, suggesting incorporation of metal fragments. The wall material has fired to an oxidised salmon pink colour, is very sandy with abundant grains of up to approximately 0.5mm, and has an organic (grass?) temper.