

# RECIPE FOR DAUB? AN INVESTIGATIVE PETROGRAPHIC STUDY OF A COMMON CONSTRUCTION COMPONENT IN THE MAYA AREA

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**ABSTRACT:** Daub is a mixture of plastic substance, aggregate, and organic binders applied against a stick or wood structure. Used extensively throughout the world, past and present, few studies have focused on compositional and provenance characteristics that relate to resource procurement, variability in compositions across time and space, and traditions of construction practice. We present results of a comparative petrographic analysis of burned clay commonly identified as 'daub' from Late Classic Maya residential buildings in three difference environmental zones near El Pilar in the Maya forest. We identify and compare compositional provenance characteristics from valley, foothill, and ridgeland zones, addressing recipes and variability across the landscape.

Sample 52.1 (x500) Res. Unit 278026  
 Classic example of daub with plastic substance of clay + aggregate of fine-grained organic binder material (impressions). No binder.

Sample 52.6 (x500) Res. Unit 278026  
 Plastic substance clay + tempering-organic binder material (unseen distribution). No binder.

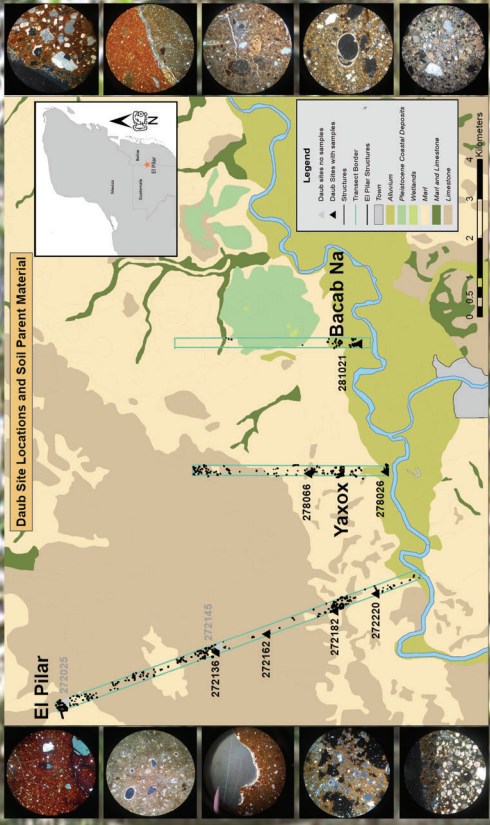
Sample 52.7 (x400) Res. Site 272136, Total Daub: 2  
 Recipe: a natural clay (no aggregate or organic binder)  
 Plastic Component: a poorly sorted natural clay containing predominantly subrounded, sand-sized (mode=0.35mm) inclusions of altered multimineralic lithic fragments and quartz, angular, silt-sized inclusions of muscovite and very rare zircon and fragments of clay accumulation (bright red-orange). Origin: seasonally inundated, well-drained land area  
 Aggregate: none  
 Other: frequent channel voids and vugs; concentric iron-rich concretions; frequent iron-rich impregnations and nodules; frequent iron-rich inclusions; contrasting calcite-rich surface layer (lime wash)

Sample 52.8 (x400) Res. Unit 272182, Total Daub: 2  
 Recipe: a natural marl (no aggregate or organic binder)  
 Plastic Component: a highly micritic, bioclastic marl containing very rare angular, silt-sized inclusions of chert. Origin: ridgeland limestone  
 Aggregate: none  
 Other: rare planar voids; abundant bioclast 'ghosts' with linings of secondary crystalline calcite; iron-rich impregnations.

Sample 52.3 (x400) Res. Unit 272182, Total Daub: 1  
 Recipe: a natural, organic-rich clay + lime  
 Plastic Component: fine-textured, poorly sorted natural clay containing predominantly subangular, silt-sized inclusions (mode = 0.015) of calcite, quartz, chert and very rare zircon. Origin: seasonally inundated land  
 Aggregate: none  
 Other: planar voids (cracks); iron-rich nodules, impregnations and concentric concretions; contrasting calcite-rich surface layer (lime wash)

Sample 52.4 (x400) Res. Unit 272182, Total Daub: 3  
 Recipe: a natural, organic-rich clay + lime  
 Plastic Component: fine-textured, poorly sorted natural clay containing abundant silt-sized (mode=0.039) angular to subangular, fine-sand-sized (mode = 0.015mm) inclusions of quartz, chert, muscovite, and very rare sericitized feldspar. Origin: land-based  
 Aggregate: plaster and daub  
 Other: planar voids (cracks); organic cavities with jagged boundaries, lining in voids and organic cavities (quartz, calcite, ash rest); iron-rich impregnations, contrasting calcite-rich surface layer

Sample 52.11(x1000) res. Unit 272220, Total Daub: 9  
 Recipe: a natural clay + crushed sparry calcite - RELATED TO CERAMIC PRODUCTION  
 Plastic Component: a fine-textured, calcareous, natural clay containing a small quantity of subangular to subrounded, sand-sized inclusions of quartz, chert, mica, calcite, feldspar, rare altered multimineralic lithic fragments, calcibony, muscovite zircon and shell. Origin: river deposit  
 Aggregate: Tempor: crushed angular to subangular sparry calcite mosaics and terminal grades  
 Other: frequent channel voids and vugs; concentric iron-rich concretions; firing horizon dominated by calcite 'ghosts' (relict structures of dissolved calcite) (particularly surrounding calcites); frequent iron-rich impregnations and nodules.



Sample 52.6 (x1000) Res. Unit 278026, Total Daub: 9  
 Recipe: a natural clay + recycled building material + grass-like organic binder (cut)  
 Plastic Component: a fine-textured, calcareous, natural clay containing a small quantity of predominantly sub-angular to sub-rounded, silt-sized (mode = 0.05) inclusions of quartz, calcite and rare chert. Origin: land-based  
 Aggregate: plaster and daub  
 Other: very rare planar voids, vugs and channel voids (particularly surrounding calcites); frequent iron-rich impregnations and nodules; irregular, intermittent calcite-rich surface layer

Sample 52.1 (x1000) Res. Unit 278026, Total Daub: 2157  
 Recipe: a natural clay + recycled building material + grass-like organic binder (cut)  
 Plastic Component: a fine-textured clay, small quantity of sub-rounded, silt-sized (mode = 0.01mm) inclusions of altered multimineralic lithic frags, chert, quartz, muscovite, and very rare feldspar and shell frags. Origin: river deposit  
 Aggregate: crushed plaster  
 Other: organic cavities with jagged boundaries, lining in voids and organic cavities (quartz, calcite, ash rest); iron-rich impregnations, contrasting calcite-rich surface layer

Sample 52.2 (x400) Res. Unit 278026, Total Daub: 2157  
 Recipe: a natural clay + sand (no organic binder)  
 Plastic Component: a natural clay containing abundant silt-sized (mode=0.039) angular to subangular, fine-sand-sized (mode = 0.015mm) inclusions of quartz, chert, mica, calcite, feldspar, rare altered multimineralic lithic fragments, calcibony, muscovite zircon and shell. Origin: river deposit  
 Aggregate: sand of similar composition to inclusion component of the clay  
 Other: planar voids (cracks) and large vugs; uneven distribution of larger-sized lithic clasts, iron-rich nodules and segregations.

Sample 52.14 (x1000) Res. Unit 281021, Total Daub: 1730  
 Recipe: a natural clay + sand (no organic binder)  
 Plastic Component: a natural clay containing abundant silt-sized (mode=0.039) angular to subangular, fine-sand-sized (mode = 0.015mm) inclusions of quartz, chert, mica, calcite, feldspar, rare altered multimineralic lithic fragments, calcibony, muscovite zircon and shell. Origin: river deposit  
 Aggregate: sand of similar composition to inclusion component of the clay  
 Other: planar voids (cracks) and large vugs; uneven distribution of larger-sized lithic clasts, iron-rich nodules and segregations.

**RESULTS:** The petrography of daub demonstrates an intricate picture archived in fragments: variety in recipe, complexity in compositions, and individuality:

1. There is no a common recipe for the making daub material for construction. Recipe varies within the same sites as well as among sites.
2. Raw materials come from the immediate area in all contexts but one: 272-136, the location of an obsidian workshop, the clay likely derived from an alluvial setting.
3. Not all samples proved to be daubi! We distinguished two fragments that look like prepared tempered clay for use in manufacturing pottery.
4. We can detect micro-regional geological variation, invisible in course scaled geological studies.

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