# MECHANICAL PERFORMANCE TESTS TO EXPLORE THE RESILIENCE OF PREHISTORIC GLUES IN HAFTING

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## Abstract

Adhesives are rarely preserved for the Palaeolithic period, but they have been important in current debates on prehistoric technologies. The use of glue and more in particular specific glue mixtures (i.e., resin with ochre) or birch tar, has been used as a proxy to evaluate hominin cognition.

Several experiments with glue have been performed, either with regard to glue used in the hafting of stone tools, glue production or glue performance tests. In spite of that, problems remain with regard to the current body of available experimental data and inferences relying on these experiments.

We present the results of an experimental study in which a broad range of glues, both protein and vegetal-based, with varying additives were submitted to mechanical bench testing in order to improve our understanding of prehistoric glue use. Glues were tested in combinations directly relevant to prehistoric hafting arrangements in which a mineral and an organic component are joined together in an effective composite arrangement. Use of such tripartite samples allows for a realistic reproduction of hafted tools and a reliable evaluation of their mechanical behaviour under stress. We conclude by highlighting the versatility and effectiveness of each adhesive and substrate combination and by emphasizing the necessity to consider tool use when reflecting on the choice and manufacturing process of glues.

**Keywords**: adhesives; mechanical testing; experimental archaeology; hafting; composite systems