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		Página 1 de 1

TÍTULO ARTÍCULO (En Inglés)	EXPERIMENTAL DIAGNOSIS OF EARTHEN CONSTRUCTION: CHARACTERIZATION AND IN-SITU ESTIMATION		
TÍTULO ARTÍCULO (En Español)	DIAGNÓSTICO EXPERIMENTAL DE CONSTRUCCIONES DE TIERRA: CARACTERIZACIÓN IN SITU Y EN LABORATORIO		
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ABSTRACT (En inglés)

Earthen buildings form one of the largest building stocks worldwide. This is true for more humble buildings, whilst of the 563 cultural sites that were inscribed on the World Heritage list, 17% are fully or partially built with earth (UNESCO).

Conservation and sustainable development are two disciplines that seem to be uncomfortably far from one another. However, there are several advantages in conserving earthen buildings: reduction of carbon footprint, improvement of occupant health due to building quality, and keeping with cultural continuity. The environmental credential of earth as building materials relates to the fact that manufacturing and conservation does not deplete significantly finite natural resources, but also that handmade, air-dried materials have the lowest embodied energy and recycling or disposal does not require high levels of energy. Earth materials create low levels of waste and generally cause no direct environment pollution during the whole life cycle.

However, if not properly protected, earthen materials can be vulnerable to decay and damage. In fact, earthen buildings present a very low tensile strength, a low compressive strength and a fragile behaviour, and are generally speaking vulnerable to earthquakes. These considerations, and the present lack of guidelines for the conservation of earthen buildings, point to the necessity of studying proper diagnosis techniques with the objective of being the basis for adequate intervention methods.

The aim of this paper is to provide an overview of available tests both for earth material characterization (chemical, physical and mechanical) in the laboratory, and in situ estimation of its morphology and its mechanical behavior.

Keywords (En inglés)

Earthen construction, rammed earth, earth material characterization, diagnosis techniques, mechanical behaviour

RESUMEN (En español)***Palabras clave (Español)***

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