Characterization of mortars using drilling resistance measurement system (DRMS): tests on field panels samples

Non-destructive or micro-destructive in situ tests are very relevant to the physical characterization of materials used in historical buildings. “Controlled penetration,” “sphere shock” and “sonic methods” can be used to evaluate the mechanical resistance of mortars and renders or to monitor the hardening process after their application. Used to evaluate surface hardness, micro-drilling (DRMS) is a very sensitive technique, and its use in this field is expected to contribute to more precise results. However, the diversity of the composition of mortars and the systematic presence of abrasive components are limiting factors for the use of this method in this field. In this study, several mortars with different composition and hardness are compared using drilling resistance as the comparative parameter. The mortars were applied on-site aiming at their use in real situations. Extracted mortar samples were tested in the laboratory using resistance drilling which was complemented by additional methods currently used for in situ characterization of these materials. The results highlight the need for an integrated perspective of laboratory and on-site information.