

application note



Rock Strength Testing OXRbl, School of Geography University of Oxford

Studying weathering effects on fragile sandstone: Reliable surface hardness data must be obtained without causing damage.

OXRbl are currently conducting research on the deterioration of Clarens sandstone in the Golden Gate Reserve, South Africa. The sandstone hosts an important collection of San Rock Art, which is under threat due to rapid weathering processes. Flaking, honeycombing and crumbling of the surface are found widely within the rock shelters around the Reserve. The formation of these weathering features is believed to be closely related to internal moisture movements within the rock. Geoelectric investigations are used to monitor internal moisture transport and accumulation, while surface temperature monitoring, surface hardness and near-surface saturation levels provide secondary data sets with which to test our hypothesis.

Application

OXRbl uses the Equotip to measure surface strength of sandstone in rock shelters along 2D resistivity transects. By doing so, they can explore the relationship between hardness of the surface and weathering related to internal moisture movements. Up to fifty measurements are taken along each transect, in clusters of ten measurements around the site of each electrode. Means and standard deviations are compared to assess differences within a small area, along the larger transect and as a comparison with other transects.

The Equotip has proven to be a very reliable method for assessing rock surface strength on weathered sandstones and its portable design means that it is easy to use even in difficult conditions and settings.

Customer Quote

"Using the Equotip in conjunction with other geomorphological methods has shown that it is a very useful and reliable instrument, which has a much lower impact on the stone surface than conventional methods such as the Schmidt Hammer. This makes it an extremely useful method for the fragile weathered sites on which we predominantly work."

Lisa Mol – OXRbl – Proceq customer since 2007

Profile

Customer

Oxford Rock Breakdown Laboratory, University of Oxford
OXRbl uses a wide range of techniques to further understanding of rock breakdown and stone deterioration in a number of different settings. Their research aims to characterise the impacts of weathering, explain the processes going on, and search for sustainable management solutions.

Employees

6 staff plus D. Phil., M. Sc. and undergraduate students

Requirements

- Accurate and state-of-the-art techniques
- Repeatability of results
- Portability for use in the field
- Durable materials to withstand harsh field conditions
- Application to a wide range of materials and surface strength

Proceq Product

Equotip 3 with impact device D

Benefits to the Customer

- Easy to use device with internal storage for data
- Light impact reduces damage to rock surface, suitable for fragile sites
- Portable and reliable