

LABORATORY: CNR ISPC Stone LAB

NAME OF THE INSTRUMENT

Instrumentation for surface hardness testing (Erichsen hardness tester mod.413, EQUOTIP 550 Portable Hardness Tester, OS-120PM pendulum Sclerometer, "Schmidt LIVE" Sclerometers)

GENERAL DESCRIPTION:

Instrumentation includes:

- Sclerometers for testing natural stone elements, concrete, and mortar joints at different impact energies to accommodate specimens of different sizes and surface hardnesses
- Portable rebound durometer with Leeb technology
- Durometer for scratch resistance tests

TECHNICAL DESCRIPTION: Sclerometers

- Original "Schmidt LIVE" N-type sclerometer with an impact energy of 2.207 Nm, equipped with graphic display, battery life of not less than 5000 impacts, and interface for data export to PC;
- Original "Schmidt LIVE" L-type sclerometer with an impact energy of 0.735 Nm, equipped with graphic display, battery life of not less than 5000 impacts, and interface for data export to PC
- OS-120PM PENDulum Sclerometer for mortars with impact energy of 0.833 Nm and a maximum diameter of impacting mass 1cm

TECHNICAL DESCRIPTION: Durometers

- Portable rebound hardness tester with Leeb technology for hardness measurements on stone materials, EQUOTIP 550 Portable Hardness Tester with "Complete Type "D" strike tool"
- Hardness tester for scratch resistance tests to determine hardness, adhesion, and scratch resistance of finishes on painted, enameled, or coated surfaces; Erichsen Universal Apparatus mod.413.

The different instruments measure the surface hardness of materials. The choice of instrument to be used depends on the physical/mechanical characteristics of the materials, sample size, and surface finish.



FURTHER INFORMATION:

- ASTM D 5873 – Standard Test Method for Determination of Rock Hardness by Rebound Hammer Method.
- ISRM – Aydin A., ISRM Suggested method for determination of the Schmidt hammer rebound hardness: Revised version. Int J Rock Mech Mining Sci (2008),DOI: 10.1016/j.ijrmms.2008.01.020.
- UNI EN 12504-2:2021 Testing concrete in structures - Part 2: Non-destructive testing - Determination of rebound number.
- ASTM A956/A956M-17a Standard Test Method for Leeb Hardness Testing of Steel Products.
- DIN 53799-10:1982-08 Test methods for decorative laminated sheets on the basis of aminoplastic resin; behavior against scratching.
- UNI EN ISO 1518-1:2023 Paints and varnishes - Determination of scratch resistance - Part 1: Constant-loading method.

Referent: Emilia Vasanelli emilia.vasanelli@cnr.it