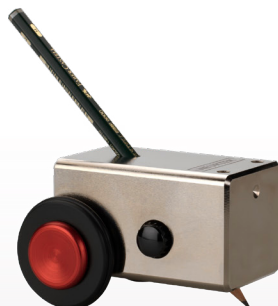


HARDNESS

PH1100 PENCIL HARDNESS TESTER



Wolff-Wilborn scratch
hardness test.

STANDARDS

ISO 15184 · ASTM D3363 · DIN EN 13523-4

The PH1100 Pencil Hardness Tester is NK by NEURTEK's benchmark instrument for determining the surface scratch hardness of paints, inks, coatings and varnishes using the Wolff-Wilborn test. Its precision pencil holder ensures a constant pressure of 750 g and a 45° angle throughout the test, eliminating operator-induced variability and ensuring reproducible results.

The instrument is supplied with 14 pencils of standardised hardness grades (from 6B to 6H), a pencil sharpener and a carrying case. Optionally, it can be expanded with a set of extra-hard pencils (7H, 8H and 9H) for testing high hardness coatings.

APPLICATION

- **Furniture and decorative surfaces:** determination of the scratch hardness of lacquers, varnishes and UV coatings on wood and board.
- **Automotive:** evaluation of paints and coatings on bodywork and interior components in accordance with OEM specifications.
- **Industrial and powder coatings:** quality control of curing and surface hardness during production and material receipt.
- **Coil-coated materials:** hardness testing in accordance with EN 13523-4 for continuous coatings on metal.
- **Synthetic resins and plastics:** development and validation of the surface hardness of new formulations.
- **Coatings R&D:** rapid comparison of hardness between formulations, solvents, temperatures and curing times.

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GENERAL CHARACTERISTICS

- Test penholder ensuring a constant pressure of 750 g and a fixed angle of 45° throughout the entire stroke.
- Quick pencil change during the test to minimise interruptions and reduce testing time.
- 14 pencils included (6B to 6H) covering the full range of the standard Wolff-Wilborn scale.
- Can be expanded with an additional set of 7H, 8H and 9H pencils for high-hardness coatings.
- Pencil sharpener included to ensure the correct tip geometry before each test.
- Supplied in a robust carrying case for use in the laboratory and in the field.
- Designed and manufactured by NK by NEURTEK in Spain.

TEST PRINCIPLE — WOLFF-WILBORN METHOD

The PH1100's pencil holder maintains the pencil at a 45° angle to the coating surface and applies a fixed load of 750 g. The operator moves the device in a straight line at a constant speed. Pencils of progressively higher hardness are tested until the first one that scratches or damages the coating is detected.

The grade of the hardest pencil that does not scratch the coating is taken as the scratch hardness value. Alternatively, it can be expressed as the grade of the softest pencil that does scratch it. Both ways of expressing the result are set out in ISO 15184.

PENCIL HARDNESS SCALE

The pencil hardness scale ranges from 6B (softest) to 9H (hardest). The NK-PH1100 unit includes the 14 grades of the standard scale (6B to 6H). Grades 7H, 8H and 9H are available as optional accessories.



APPLICABLE STANDARD

- **ISO 15184 / UNE EN ISO 15184:** Paints and varnishes — Determination of pencil hardness by the Wolff-Wilborn method. This standard specifies the pressure (750 g), the angle (45°) and the evaluation procedure.
- **UNE 48269:** Equivalent Spanish standard for the pencil hardness test on paints and varnishes.
- **ASTM D3363:** Standard Test Method for Film Hardness by Pencil Test. A method widely used in North America.
- **EN 13523-4 / DIN EN 13523-4:** Coil-wound materials — Resistance to pencil scratching. Applicable to continuous coatings on metal (coil coating).

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TECHNICAL SPECIFICATIONS

Parameter	Value
Test pressure	750 g (7.36 N)
Test angle	45°
Pencil hardness scale included	6B, 5B, 4B, 3B, 2B, B, F, HB, H, 2H, 3H, 4H, 5H, 6H (14 grades)
Extended scale (accessory)	7H, 8H, 9H (additional set NK-PH1100-2)
Applicable standards	ISO 15184 · UNE 48269 · ASTM D3363 · EN 13523-4

MODEL

Code	Description
NK-PH1100	PH1100 pencil hardness tester according to Wolff-Wilborn — includes pencil holder, 14 pencils (6B–6H), pencil sharpener and carrying case

The supply includes: Pencil holder + 14 pencils + pencil sharpener + carrying case.



ACCESSORIES

Code	Description
NK-PH1100-1	Set of 14 replacement pencils: 6B, 5B, 4B, 3B, 2B, B, F, HB, H, 2H, 3H, 4H, 5H, 6H
NK-PH1100-2	Set of 3 extra-hard pencils: 7H, 8H and 9H (for high-hardness coatings)
NEU-1102010	250 g Weight Set for PH1100 Pencil Hardness Tester, including attachments for the base unit.

