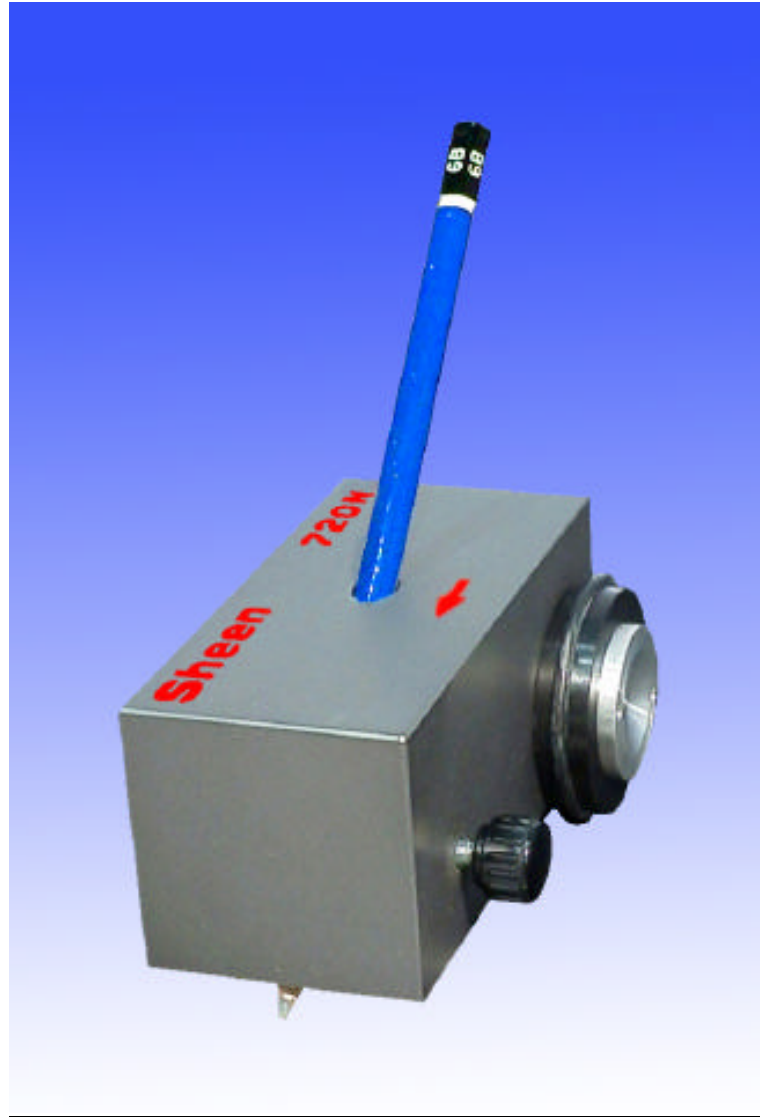


**720N  
PENCIL TESTER INSTRUCTIONS**



**Issue A  
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## 1.0 Introduction.

This instrument offers an easy to use method for the determination of film hardness for a coating applied to a flat substrate, by means of drawing pencil leads of known hardness at a constant applied mass across the coated surface.

## 2.0 Packing List:

- \* Pencil Tester, Body
- \* 1 Set of Pencils (14) :- 6B-5B-4B-3B-2B-B-HB-F-H-2H-3H-4H-5H-6H.
- \* Special Pencil Sharpener
- \* Abrasive Paper, 400 grade grit.
- \* Certificate of conformity or Calibration (if requested)

## 3.0 Specifications.

The Pencil Tester complies with the requirements of ASTM D 3363, ECCA-T4 /1. In order to achieve consistent results it is recommended that the test be conducted in accordance with the stated test methods.

## 4.0 Preparation for Test.

The following instruction will provide the user with a working knowledge of how to conduct the test. These notes should be read in conjunction with the stated test methods in order to obtain meaningful results that can be used for comparative purposes.

- 4.1 Select a pencil from the range, remove approximately 5 to 6 mm of wood from the point using the special Pencil Sharpener, being careful to leave an undisturbed, unmarked, smooth cylinder of pencil lead.
- 4.2 The tip of the pencil shall be squared by holding the pencil in a vertical position and moving the pencil back and forth over the abrasive paper, whilst maintaining an angle of 90°. Continue until a flat, smooth, circular cross-section is obtained, free from chips or nicks in the edges.
- 4.3 Repeat procedure 4.1 & 4.2 each time a pencil is used.
- 4.4 Place the coated panel to be tested on a level, firm horizontal surface.
- 4.5 Place the Pencil Tester Body on end, onto a firm horizontal surface (arrow pointing downwards & wheels facing uppermost) turn the clamping knob anti-clockwise sufficient to permit the pencil to fit.
- 4.6. Slowly slide (care should be taken not to chip the pencil edges) the prepared pencil into the hole adjacent to the arrow until it rests on the same firm horizontal surface as the pencil tester body. Turn the pencil clamping knob clockwise to lock the pencil in position.  
Carefully lift the pencil tester off the surface, ensure pencil is set firm and is free from damage to edges.

***Important: always ensure the position of the pencil is the same, thereby applying the consistent mass to the coating under test.***

Place the pencil tip gently onto the scales and read the applied mass, value to be 750 +5/-15 grams.

- 4.7 Carefully place the prepared pencil tester, wheels first onto the surface to be tested, gently bring the pencil tip into contact with the coated surface to be tested, ensure no chipping occurs.
- 4.8 Immediately after the tip of the pencil rests on the coated surface, place thumb and forefinger on the pencil tester, centre portion of each wheel, push the instrument in the direction of the arrow for a suggested distance of 7mm.
- 4.9 Inspect the coating after a specified period of time with the naked eye check for marking of the surface.
- 4.10 If no marking has occurred, repeat the test (4.1 to 4.8) on a new portion of undisturbed coating, moving up the hardness grade scale until marking occurs over the test distance.  
If marking has occurred repeat the test (4.1 to 4.8) down the hardness scale until marking no longer occurs.
- 4.11 Carry out the test in duplicate, if the results differ by more than one pencil unit

***Note: The hardness of the hardest pencil that does not mark the coating is the so-called pencil hardness. Further definition of pencil hardness is stated in the test method standards.***

## **5.0 Limitations.**

This test method is applicable to smooth surfaces, it is not considered suitable for textured or rough surfaces.

## **6.0 Routine Maintenance.**

- 6.1. Ensure the Pencil Tester body is free from damage, dents, paint chips etc. as this may effect the applied mass.
- 6.2 The rubber rings on the wheels are clean and free to rotate.
- 6.3 The instrument and pencils are stored in the case supplied when not in use. Always replace any pencils with the same reference type and manufacturer. (pencils from different manufacturers may produce different results).
- 6.4 Ensure the special pencil sharpener supplied is always used, check the blade for sharpness.
- 6.5 Replace the abrasive paper 400 grit when required.

## 7.0 Calibration.

7.1 The Pencil Tester maybe checked for the correct applied mass by preparing the instrument as defined (7.2 to 7.6)

**Note the instrument is correctly set at the factory, no further adjustment can be made.**

7.2 Set the wheels of the instrument on a firm horizontal surface in direct, precise alignment with the measuring pan of precision scales.

7.3 Place the pencil tip gently onto the scales and read the applied mass, check the value to be within 750 +5/-15 grams.

## 8.0 Service Parts

*	Set of Pencils (14)	Ref.	721
*	Special Pencil Sharpener,		720/104/P
*	Spare Rubber Rings (2)		720N/100/P

When ordering spare parts, please state the following information:

- \* Model Ref
- \* Serial number of the instrument
- \* Name of part
- \* The quantity

## 9.0 Further Information

For more information regarding this product, spares, accessories etc. or if you would like a catalogue listing our full range of products, please contact your local agent or Sheen Instruments at the address on the following page.

Abrasion Tester (Wet & Dry)  
Adhesion Testers  
Applicators - various  
Bubble Viscometer  
Colour Measuring  
Colour Matching Cabinet  
Conical Mandrel Tester  
Cross Hatch Cutters  
Cryptometers (Pfund)  
Cupping tester  
Deformation Testers  
Drying Time Recorder  
Film Applicators, Spreaders  
Fineness of Grind Gauges  
Flow Cups  
Gel Strength Tester  
Glossmeters  
Hazemeters  
Hardness Testers  
Hiding Power Charts  
Holiday Detectors  
Humidity Cabinets  
Impact Testers  
Minimum Film Forming Temp  
Bar  
Opacity Charts  
Opacity Reflectometer  
Panel Sprayer - Automatic  
Permeability - Payne Cups  
Pycnometers  
Pinhole Detectors  
Powder Coating  
Pressure Density Cup  
Rotating Paddle Viscometers  
Rotothinners  
Sag Index Applicators  
Salt Spray Cabinets  
Scrub Tester  
Scratch Testers  
Specific Gravity Cups/Weigher  
Taber Abrasors  
Thickness Gauges  
Traffic Wheel  
Viscometers  
Weight Per Gallon Cups  
Wet Film Thickness Gauges  
Zahn Cups

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