

hanatek

RUB AND ABRASION TESTER



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INTRODUCTION TO RUB AND ABRASION TESTING

A laboratory rub proof tester is a tool for comparing the rubbing, scuffing and marking of inks and coatings on commercial print and packaging, it can be used as part of quality control in a production environment or an aid to development in the laboratory.

Protective packaging, magazines, commercial documents and promotional material are all printed with inks and coatings which are designed to remain clear, bright and undamaged during the items lifetime.

Labels and food packaging may require resistance to detergents, fats and oils and be washable.

Unfortunately movement during packing, shipping or everyday handling can cause items to mark or scuff. The coatings and substrates used, the cure conditions and the amount of abrasion all affect the severity of this damage.

Modern papers and carton boards can prove a challenge for inks and coatings, harsh substrates such as matt paper and recycled board are prone to marking, scuffing and rubbing during post print production and transportation.

The rub tester allows the user to compare the durability of printed cartons, commercial print or proofs of ink and varnish on a wide range of substrates.

The washability and resistance to fat, oils and detergents of inks and coatings can also be tested.

The tester uses a rotary motion to abrade the printed surface against virgin material, face to face against itself or to a reference material. The user can vary the abrasion force or number of cycles to adjust the severity of the test.

This tester allows the user to visually compare the performance of different batches of product, ink/varnish formulations or substrates under the same abrasive conditions.

The Hanatek rub tester has been designed and manufactured in conjunction with Pira International for assessing the rotational rub resistance of printed materials. It meets the requirements of BS 3110, Method 2 – “Methods for Measuring the Rub Resistance of Print – Rotary Method”.

The Hanatek rub tester replicates the test method used on older style instruments such as the Pira/Wallace rubproofness tester but benefits from the inclusion of cycle selection, assuring accurate unsupervised abrasion testing.

Hanatek also supply two optional abrasion feet and replacement pads-

Scouring Abrasion-

Using standard 3M material the scouring abrasion test simulates heavy scratching and abrasion of the material under test. This test can be used for plastic materials such as labels. It is useful for determining the through cure of UV coatings. Abrasion tests can be performed wet or dry.

Felt Pad-

Used to “wet” abrade the surface of the printed material this test can gauge fats/soap/detergent/water resistance of samples.

PACKING LIST

Hanatek Rub and Abrasion Tester
1 x Hanatek Rub Test Sample Cutter
Foot Adjustment Spanner
Bulls Eye Spirit Level
Rubproofness (foam) sample head
0.5 P.S.I. Test Weight
1.0 P.S.I Test Weight

OPTIONAL EXTRAS

HANATEK RESULTS PRINTER
ABRASION TESTER HEAD
RESISTANCE ABRASION HEAD

SPARES

HAN-H-RT-PAD115	115mm Foam Pad
HAN-H-RT-PAD50	50mm Foam Pad
HAN-H-RT-PAD50- FELT	50mm Felt Pad
HAN-H-RT-PAD50- BRI	50mm Abrasive Pad

WARNING – THE HANATEK RUB TESTER HAS MOVING PARTS WHICH MAY CONSTITUTE A PINCHING RISK FOR HAND/FINGERS AND ENTANGLEMENT RISKS FOR HAIR OR CLOTHING

REASONABLE CARE MUST BE TAKEN AT ALL TIMES – DO NOT TOUCH THE MOVING PARTS DURING OPERATION AND ENSURE HAIR AND CLOTHING ARE KEPT CLEAR.

THE HANATEK RUB TESTER CONTAINS NO USER SERVICEABLE PARTS. DO NOT OPEN THE INSTRUMENT ENCLOSURE- RISK OF ELECTRIC SHOCK OR FIRE.

ASSEMBLY

- 1.0 Remove the Tester from all packaging
- 2.0 Place the instrument on a suitable bench and put the supplied bull's eye spirit level on the instrument bed next to the rotating sample holder.
- 3.0 Check the instrument is level, the bubble should be contained within the circle in the centre of the spirit level. If the platen is not level use the supplied spanner to adjust the feet of the instrument.

Power up the instrument

- 1.0 Use the supplied mains lead to connect the Hanatek Rub Tester to a suitable mains supply.
- 2.0 Switch the instrument on using the red button at the rear of the instrument.



The touch screen display after switch on.
Press anywhere on the screen to continue.

USING THE SAMPLE CUTTER

WARNING THE CUTTING WHEEL IS VERY SHARP- TAKE CARE WHEN HANDLING.

The sample cutter has two positions-

Small circle 50 mm diameter for the top rub-abrasion sample.

Large circle 115 mm diameter for the bottom rub-abrasion sample.

Adjusting the sample cutter size

- 1.0 Press the handle so that the cutting arm is below the plastic guard.
- 2.0 Grip the cutting arm on the end opposite the cutting wheel.
- 3.0 Move the arm to the required cutting position.



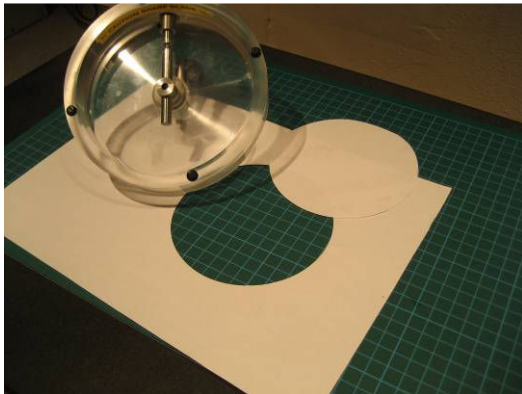
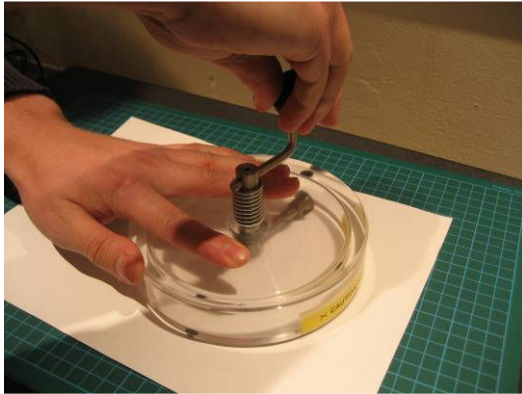
The sample cutter- set to cut a 115mm sample.



The sample cutter- set to cut a 50mm sample.

Cutting a sample

- 1.0 Place the cutter on the sample and hold lightly in position. Press on the handle until the wheel is in contact with the surface.
- 2.0 Rotate the handle maintaining gentle pressure to cut the sample.



SELECT THE TEST TYPE

The Hanatek Rub and Abrasion tester can be used with three different sample heads. The instrument is supplied with the foam pad as standard, the abrasion/scratch and felt pad heads are optional extras.

Foam Pad-

This test type is used for face to face rub proofness testing.

Abrasion Scratch Test-

This test is more aggressive and useful for assessing through cure of coatings (UV adhesive labels) or high abrasion transit testing.

Felt Pad-

This test is used to test the water, detergent or fat resistance of inks and coatings.

Changing the sample head

- 1.0 Remove any weights and lift the handle so that the head is raised.



- 2.0 Pull down on the red sample head to remove (it is held in place by magnets).

- 3.0 Replace the sample head with the required version.
- 4.0 Select the test type in the instrument menu screen; press the +/- buttons to cycle through the available options.



Replacing the Abrasive or Felt Pad

After every test the Abrasive or felt pad should be checked for damage or excessive coating built up and replaced if necessary.

Spare pads are available from Hanatek.

HAN-H-RT-PAD115	115mm Foam Pad
HAN-H-RT-PAD50	50mm Foam Pad
HAN-H-RT-PAD50- FELT	50mm Felt Pad
HAN-H-RT-PAD50- BRI	50mm Abrasive Pad



The replacement heads are supplied with adhesive backing.

- 1.0 Peel off the old pad, removing all adhesive from the metal head.
- 2.0 Remove the backing material from the replacement pad and stick in place.

SELECTING THE TEST CONDITIONS

The user should select test conditions that are close to the failure point of the material. Increasing the test pressure increases the severity of the test. The failure point can be found by trial and error, several tests should be carried out using increasing weights until marking of the substrate and/or deterioration of the coating is visible.

Test pressure-

The provided weight set provided allows for 3 test pressures,

pounds / inch ² (p.s.i.)	kPa equivalent	Weights
0.5	3.45	None
1.0	6.90	Small
2.0	13.80	Small + Large



Additional Weights (up to a total weight of 4.0 KG) can be applied to the Hanatek Rub/Abrasion Tester.



Select the test pressure in the instrument menu screen; press the +/- buttons to cycle through the available options.

SELECT THE TEST REVOLUTIONS

The number of revolutions selected determines the amount of abrasion applied during the test.

To set the number of revolutions, press the “Revs” button on the instrument screen.



A touch keypad is used to input the amount of revolutions required.

RUBPROOFNESS TESTING

Ensure that “foam” is selected in the test menu and the correct sample head is fitted (see page 7 “Selecting the Test Type”).

1.0 Prepare the upper sample

This 50mm dia. sample is usually cut from a sample of printed material. Select an area on the printed sample for testing, it is usual to test areas that are MOST likely to fail; these include any heavy ink build areas or spot colours

2.0 Prepare the lower sample

The lower sample is 115mm in diameter.

There are three options for testing;

-Face to face.

Select an area from the printed material and cut a large sample using the sample cutter.

-Face to virgin substrate

A large circle should be cut from a sheet of unprinted material and used for testing.

-Face to reference substrate

The large circle should be taken from a sheet of high quality reference material. Ivorex or Melotex paper boards are usual reference materials for offset print testing.

SAMPLE POSITIONING

- 1.0 Remove the metal ring from around the bottom platen.
- 2.0 Place the large cut sample in the ring and replace the ring around the bottom platen so the test side of the sample is uppermost.
- 3.0 Remove the weights from the platen and use the handle to put the instrument into the “up” position.



- 4.0 Slide the small test sample underneath the foam head with the side to be tested face down and in contact with the large sample.
- 5.0 Lower the sample head using the handle, adjusting the sample so that when fully lowered, the printed sample is exactly covered by the foam pad.



TURNING ON/OFF THE FAN

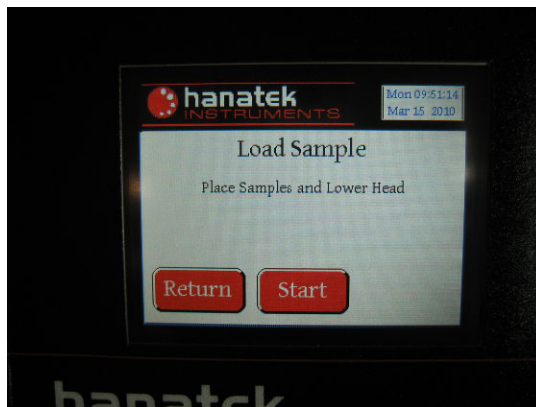
The Hanatek Rub and Abrasion Tester has a fan to remove paper fibres and debris which act as abrasive agents.

To switch on/off click the button on the test set up menu.



RUNNING THE TEST

To start the test, press the on-screen start button.



The test can be paused and re-started at any time using the on-screen buttons.

ABRASION TESTING

Ensure that “abrasion” is selected in the test menu and the correct sample head is fitted (see page 7 “Selecting the Test Type”).

The test head should be undamaged and un-Econtaminated by abraded coating.

SAMPLE POSITIONING

- 1.0 Remove the metal ring from around the bottom platen.
- 2.0 Place the large cut sample in the ring and replace it around the bottom platen so the side to be tested is uppermost.
- 3.0 Lower the abrasion head into contact with the sample using the instrument handle.



RUNNING THE TEST

To start the test, press the on-screen start button.

The test can be paused and re-started at any time using the on-screen buttons.

RESISTANCE TESTING

Ensure that “felt” is selected in the test menu and the correct sample head is fitted (see page 7 “Selecting the Test Type”).

The test head should be undamaged and uncontaminated by abraded coating.

SAMPLE POSITIONING

- 1.0 Remove the metal ring from around the bottom platen.
- 2.0 Place the large cut sample in the ring and replace it around the bottom platen so the side to be tested is uppermost.
- 3.0 Soak the felt pad in the required solvent (water/detergents) or apply directly to the sample (Fats and oils).



RUNNING THE TEST

To start the test, press the on-screen start button.

The test can be paused and re-started at any time using the on-screen buttons.

PRINTING SAMPLE LABEL

The optional Hanatek results printer allows the user to print a label which details the test conditions and time and date of testing.

The label can be attached to the back of retained samples for easy identification.

To print a label press the print button once the test is completed.



SERVICE

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EU Directive 2002/96/EC on WEEE (Waste Electrical & Electronic Equipment) and RoHS (Restriction of the use of certain Hazardous Substances).

The European Union's Directive on Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) defines each of 10 categories of electrical and electronic equipment in Annex I . Category 9 is defined as follows:

9. Monitoring and control instruments
 - Smoke detector
 - Heating regulators
 - Thermostats
 - Measuring, weighing, or adjusting appliances for household or as laboratory equipment
 - Other monitoring and control instruments used in industrial installations (e.g. in control panels).

The RoHS Directive defines the scope of restrictions in Article 2 as follows:

"1. Without prejudice to Article 6, this Directive shall apply to electrical and electronic equipment falling under the categories 1, 2, 3, 4, 5, 6, 7 and 10 set out in Annex IA to Directive No 2002/96/EC (WEEE) and to electric light bulbs, and luminaires in households."

This product is supplied as a Monitoring and Control instrument and as such falls within category 9 of the EU directive 2002/96/EC and so is excluded from restrictions under the scope of the RoHS Directive.

The Waste Electrical and Electronic Equipment Directive is intended to reduce the amount of harmful substances that are added to the environment by the inappropriate disposal of these products through municipal waste.

Some of the materials contained in electrical and electronic products can damage the environment and are potentially hazardous to human health; for this reason the products are marked with the crossed out wheelee bin symbol which indicates that they must not be disposed of via unsorted municipal waste.

Rhopoint Instruments Ltd have arranged a means for our customers to have products that have reached the end of their useful life safely recycled. We encourage all end users to us at the end of the product's life to return their purchase to us for recycling as per Article 9 of the WEEE Directive.

Please contact us on +44 (0) 1424-739622 and we will advise on the process for returning these waste products so we can all contribute to the safe recycling of these materials.