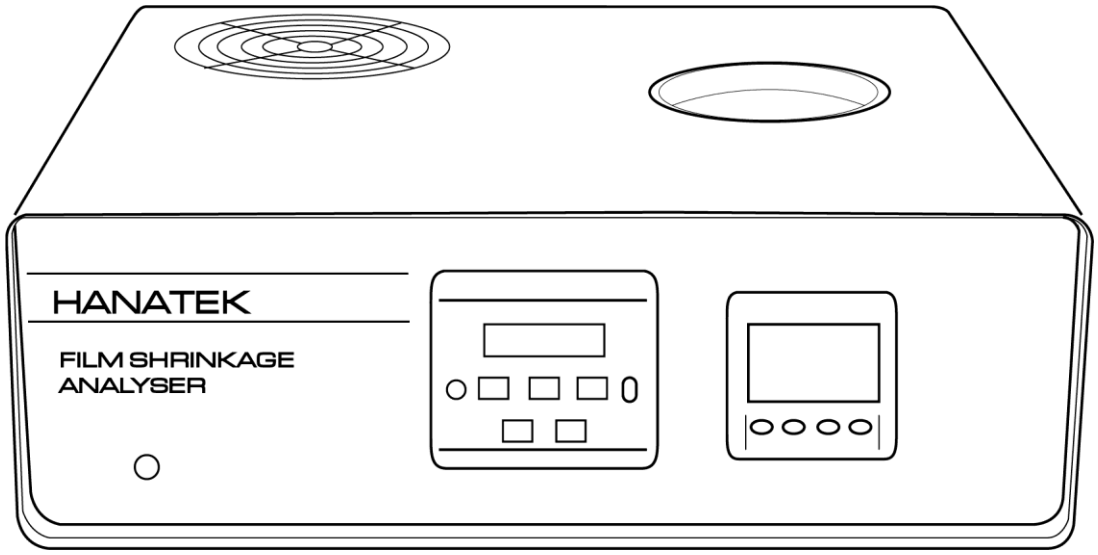
OPERATING MANUAL

FILM SHRINK TESTER



HANATEK INSTRUMENTS

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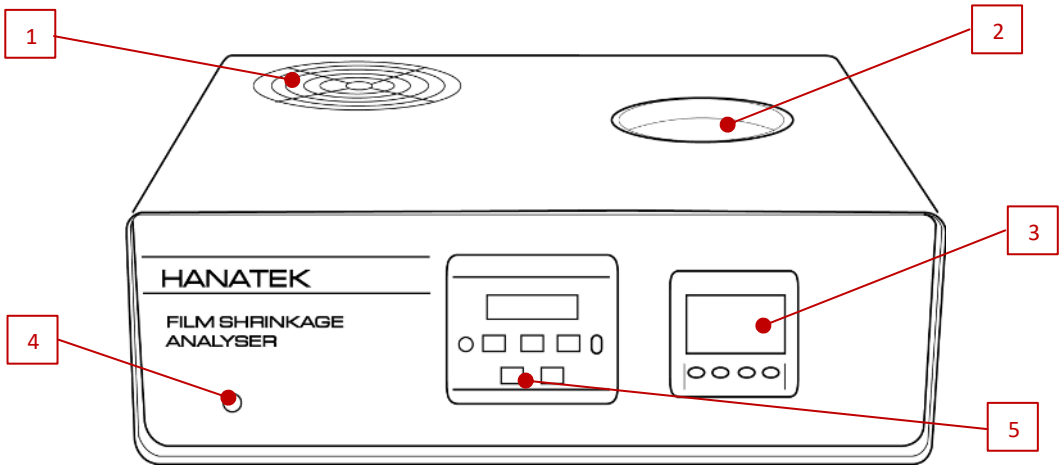
Product Safety

WARNING REASONABLE CARE MUST BE TAKEN AT ALL TIMES – THE HANATEK FILM SHINK TESTER HAS HOT AREAS ON THE TOP OF THE INSTRUMENT THAT CONSTITUTE BURNING HAZARADS. CARE SHOULD BE TAKEN AT ALL TIMES. SUITABLE PROTECTIVE EYEWEAR/CLOTHING/HEATPROOF GLOVES SHOULD BE WORN WHERE NECESSARY.

Equipment

Package Contents

1x	Hanatek Film Shrink Tester	**1x**	Mains lead – US (for 115V)
1x	Sample Template - 50mm diameter	**1x**	Calibration certificate for instrument
1x	Pack of Foil Disks – 70mm diameter (25)	**1x**	Knife
1x	Silicon Oil	**1x**	Manual
1x	Mini pipette	**1x**	Tweezer
2x	Mains leads – EU&UK (for 240V)		



Label	Function
1	Test area hot plate
2	Viewing area
3	Temperature display
4	Power display
5	Timer

Operation

Assembly

- Remove the instrument from all packaging. Retain the packaging so that the equipment can be returned for calibration and service repairs.
- Place the instrument on a suitable bench ensuring the instrument is level.
- Check the hot-plate grill is in the ‘down’ position.

Powering the instrument

- Use the supplied mains lead to connect the instrument to a suitable mains supply – the correct voltage MUST be used. This equipment must be used with an earthed supply.
- Switch the instrument on using the button at the rear of the instrument – the hot-plate will start to heat up

Set Test Conditions

Selecting test conditions

- The top figure on the display (figure 1) shows the actual temperature and will be increasing to match the set point. The bottom figure is the target temperature.

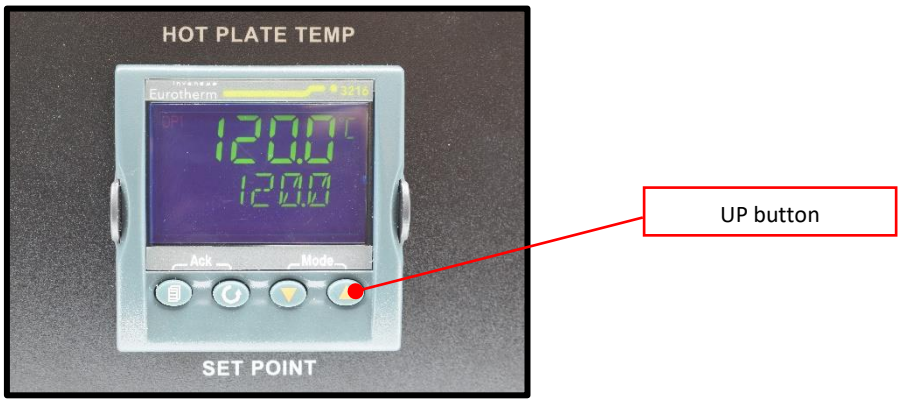


Figure 1 – Temperature display

- To set the temperature press the ‘UP’ button until the required temperature is displayed.
- Allow the instrument to reach at the required temperature and then stabilise for 20 minutes prior to performing the first test.

Sample Preparation

Sample selection

- Identify the area of the sample to be tested. It should be free from contamination and creases.

Using the sample templates

- Position the supplied template over the area and carefully cut around the template.
- Mark the samples to indicate the 'machine direction' (figure 2).
- If the test standard requires pre-conditioning this must be applied before using the instrument.

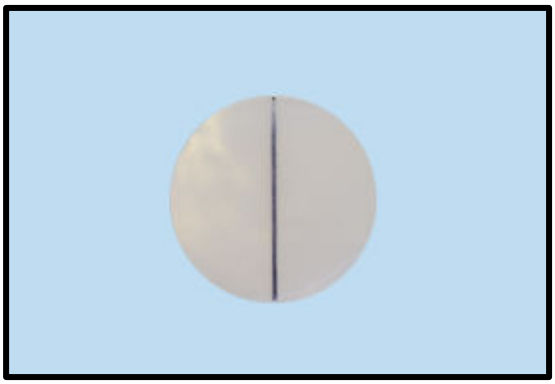


Figure 2 - Marked sample

Performing a Test

Running a test

- Add a few drops of silicon oil to the hot-plate (figure 3). This will form a film approximately 0.25mm thick.

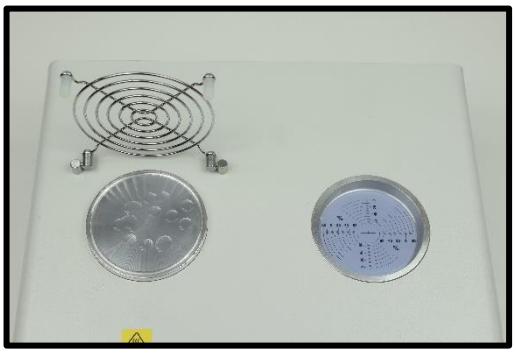


Figure 3

- Place a foil disk, with the edges turned up, in the heating area.
- Set the timer for the exact time required by the test standard – typically 30-40 seconds.
- Add a few drops of silicon oil to the foil disk (figure 4). After the oil spreads, place the prepared sample on the foil. The oil will draw the film disc down and there should be no obvious bubbles underneath.

Figure 4

- Start the timer at the same time as placing the film.
- When the timer alarm sounds, remove the sample from the foil disk and place on the cooling area.
- Turn on the backlight, centralise the sample and read the percentage shrinkage (figure 5). *The carrier disk can be reused if undamaged. Should the sample curl instead of shrinking then it may be found useful to cover the upper surface of the test piece with oil before placing in on the hot-plate.*

Figure 5

Test Results

Evaluation of test results

Generally, because of different properties with and across the machine direction, shrinkage is anisotropic, and the discs will have assumed an elliptical shape. Noting the machine direction, measure both the 'Major' and 'Minor' axes. The result is then reported as a percentage of the original dimension.

Calculations

The percentage free shrinkage is given by:

Unrestrained linear shrinkage,

$$\% = \frac{(Lo - Lf) \times 100}{Lo}$$

Where: Lo = initial length (=dia. 50mm)

Lf = length after shrinking (=dimension of major and minor axes of final ellipse)

Service and Repair

Calibration

To maintain the optimum performance of this machine Hanatek Instruments recommends an annual recalibration of the equipment.

A full list of service centres can be found on the Hanatek website:
https://www.hanatekinstruments.com/support/authorised-service-centres/

Spares

Product	Order Code
Silicone oil, 50ml	HAN-H-SILICONOIL210H
Silicone oil, 250ml	HAN-H-SILICONOIL210H/250
Carrier discs, pack of 25	HAN-H-FOIL
FST Mains Cable - EU	H-W3CORE-EU
FST Mains Cable - USA	H-W3CORE-USA
FST Mains Cable - UK	H-W3CORE-UK

For any service or repair quires contact HANATEK instruments:

Tel: +44 (0)1424 739623

Email: support@hanatekinstruments.com

Web Site: www.hanatekinstruments.com

Certificate of Conformity

RHOPOINT INSTRUMENTS

Certificate of Conformity

This is to certify that device known as

Rhopoint-Hanatek
2010 Film Shrink Tester

Has been tested and found to satisfy and comply with the CE Marking requirements of the relevant parts and portions of the specifications listed below.

Tested By:

(on behalf of Rhopoint Instruments)

10/04/2013

Date:

Accepted and Logged By:

(Director, Rhopoint Instruments)

10/04/2013

Date:

BS EN 61010-1:2010 Clause 6
BS EN 61000-4-2:2009
BS EN 61000-6-3:2007
BS EN 61000-6-1:2007

CE

hanatek

RoHS and WEEE

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 I, 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 wheelie bin symbol which indicates that they must not he 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 as 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.