

# 11 Optical Microscopy



Part image of PS5R reflected light



Part image of PS5 transmitted light

## Micrometer Calibration Scales for Incident & Transmitted Light

This **incident light scale** (PS5R) and the transmitted light scale are produced as a vacuum deposited chrome image on a square of glass, with a coverglass cemented on top. This is mounted in a stainless steel slide mount and is supplied in a polished wooden case. Internationally traceable certificates of calibration are available to satisfy the requirements of ISO.

### Features:

20mm scale in 0.01mm divisions (serial numbered, for calibrating reflected/incident light microscopes).

Negative image for reflected (incident) light

Unique engraved serial number for ISO traceability

Stainless steel slide mount and lacquered wooden case

**M442** PS5R incident light micrometer scale for reflected light

**M442/UKA** PS5R with UKAS certificate

**M442/NPL** PS5R with NPL certificate

Calibrations of compound microscopes at low magnifications, stereo microscopes and measurement of fields of view require a longer scale than those traditionally available. This new PS5 has a high accuracy scale of 20mm length, which is subdivided into 10 micron divisions. This new **transmitted light scale** (PS5) has a high accuracy scale of 20mm length, which is subdivided into 10 micron divisions.

**M443** PS5 transmitted light micrometer scale

**M443/UKA** PS5 with UKAS certificate

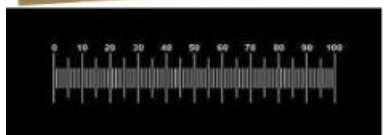
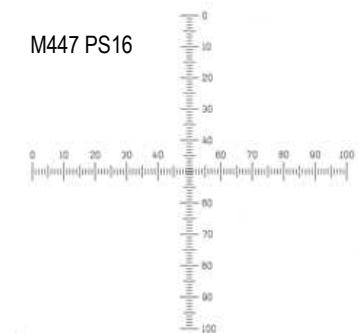
**M443/NPL** PS5 with NPL certificate

## Micrometer Calibration Scales cont...

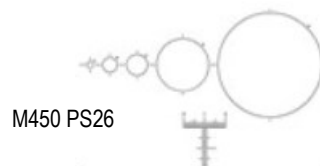
The scale is chrome deposited centrally on a glass disc mounted in a stainless steel slide mount, 76mm x 25mm x 1.5mm thick, with unique serial number engraved in the top surface. These are the products of choice where you need certified scales to have unequivocal traceability for ISO, NIST, DIN or other standards. These products are supplied in a polished wooden case to indicate that they are superior calibration tools.

Available in transmitted and reflected (incident) light versions.  
Also available with Grats, UKAS or NPL certificates as appropriate - please ask

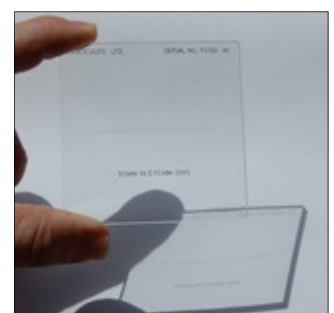
- M444** PS4 Transmitted light calibration slide with 0.1" length scale subdivided into 0.001" divisions, engraved serial number in stainless steel slide mount
- M444/R** PS4 *Reflected light* calibration slide with 0.1" length scale subdivided into 0.001" divisions, engraved serial number in stainless steel slide mount
- M445** PS8 Transmitted light calibration slide with 1mm length scale subdivided into 0.01mm divisions, engraved serial number in stainless steel slide mount
- M445/R** PS8 *Reflected light* calibration slide with 1mm length scale subdivided into 0.01mm divisions, engraved serial number in stainless steel slide mount
- M446** PS12 Transmitted light micrometer scale 0.1mm/0.002mm calibration slide with 0.1mm length scale subdivided into 0.002mm divisions, engraved serial number in stainless steel slide mount
- M446/R** As above but for *Reflected light*
- M447** PS16 Transmitted light calibration slide with crossed scales each 1mm length scale subdivided into 0.01mm divisions, engraved serial number in stainless steel slide mount
- M447/R** As above but for *Reflected light*
- M448** PS78 *Reflected light* calibration slide with 1mm length scale subdivided into 0.01mm divisions, engraved serial number in stainless steel slide mount
- M449** PS25 *Reflected light* calibration slide with diamond shapes and scales for calibrating **Vickers** and **Rockwell** hardness testers



- M450** PS26 *Reflected light* calibration slide with circle shapes and scales for calibrating **Brinell** hardness testers

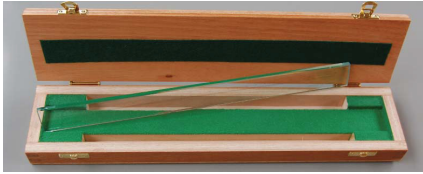


- M451** PS50 Micrometer Scale 50mm/0.1mm Long calibration scale, subdivided into 0.1mm divisions, supplied on 75mm x 75mm glass plate, unique serial number for traceability.  
Overall size: 75mm x 75mm x 3mm  
Line width: 0.012mm  
Accuracy (overall): 0.002mm



M451 PS50

## New High Definition Long Scales

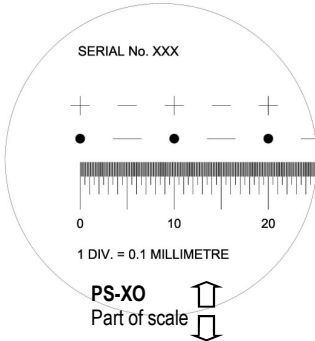


All supplied in wooden cases. Alternative glass types and calibrations available to special order.

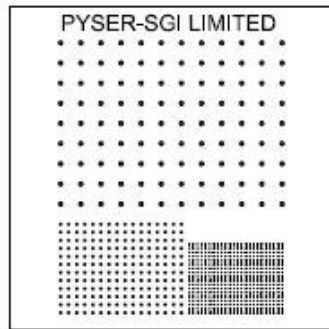
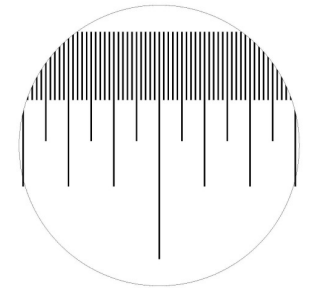
Customer demand for long scales with better line definition has led to the introduction of the new PS-XO range. These products use the very highest resolution masters to create images with excellent line edge definition. The incorporation of a dot and cross series gives a single product with 3 different calibration options. Additionally the extension of lines on the scale allows calibrations in 0.1mm, 0.5mm, 1.0mm and 5mm increments.

Many customers need to test imaging systems for field flatness, distortion and size, often at different magnifications. The **new R76** dot array satisfies this requirement with 3 image areas of different size and pitch dots.

## Combination Scales - Superior PS-XO Versions



- High definition images for accurate calibration - line edge or line centre
- Dots, crosses and scales
- 300mm, 150mm and 100mm lengths all in 0.1mm divisions
- Extended 0.5mm, 1.0mm and 5.0mm lines allow calibrations in those increments also



**R76**

12 x 9 array of 1mm dots at 5mm pitch

16 x 12 array of 0.5mm dots at 2mm pitch

24 x 18 array of 0.2mm dots at 1mm pitch

Pattern	Description	Size	Cat. No.
PS300XO	300mm combination scale, 300mm ruling in 0.1mm divisions, 1mm dots at 10mm centres, crosses at 10mm centres	330mm x 30mm x 6mm, green float glass, bright chrome image	<b>M455</b>
	As above but with UKAS certificate of calibration, 10 points measured on scale		<b>M455/UKA</b>
PS150XO	150mm combination scale, 150mm ruling in 0.1mm divisions, 1mm dots at 10mm centres, crosses at 10mm centres	180mm x 30mm x 6mm, green float glass, bright chrome image	<b>M456</b>
	As above but with UKAS certificate of calibration, 10 points measured on scale		<b>M456/UKA</b>
PS100XO	100mm combination scale, 100mm ruling in 0.1mm divisions, 1mm dots at 10mm centres, crosses at 10mm centres	130mm x 30mm x 6mm, green float glass, bright chrome image	<b>M457</b>
	As above but with UKAS certificate of calibration, 10 points measured on scale		<b>M457/UKA</b>
R76	Grid dot array, 3 image areas, 12 x 9 array of 1mm dots @ 5mm pitch, 16 x 12 array of 0.5mm dots @ 2mm pitch, 24 x 18 array of 0.2mm dots @ 1mm pitch	80mm x 80mm x 2.5mm, green float glass, bright chrome image	<b>M458</b>

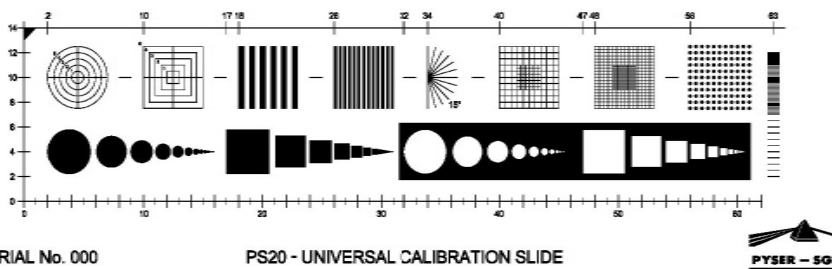
### R76

The ideal product for testing image area, distortion, field flatness and other parameters in optical and imaging systems. The three array areas give options for different magnifications or field size.

## Universal Calibration Scale

Calibration of **microscopes** and **image analysis systems** is becoming more sophisticated, with the requirement being for a variety of image patterns to satisfy the numerous parameters. This new multi-function calibration standard is specifically for these applications. Multiple images on a single slide provide the most cost-effective solution to calibration and resolution checking of microscopes and image analysis systems.

The combination of scales, dots, circles, squares, rulings, grids and angles can be supplied with an internationally traceable certificate of calibration for those who require ISO conformity. Each glass slide has a unique permanent serial number and can be supplied with full or partial UKAS certificate of accuracy. Starting from a fixed 'Datum point' mark, each individual pattern or array can be located using X, Y coordinates.



### General Specifications

General Tolerance ( $\mu\text{m}$ )	Feature size	Tolerance
	$\leq 10$	0.5
	10-50	1
	50-127	1.3
	127-250	1.9
	$> 250$	2.54
62mm scale overall accuracy	$\pm 0.003\text{mm}$	
Coating	Enduring evaporated chrome image	
Optical density	$> 2.5$	
Substrate	Soda lime glass	
Size	76 x 25 x 1.5mm	
Package	Polished wooden case	

Pattern name	Description
Concentric circles	1, 2, 3, 4, 5mm Circles with Cross Line and circle identifier. Line width $20\mu\text{m}$
Concentric squares	1, 2, 3, 4, 5mm Squares with Cross Line and circle identifier. Line width $20\mu\text{m}$
Line grating 25 lines/mm	12.5 Line Pairs/mm ( $40\mu\text{m}$ line $40\mu\text{m}$ space)
Line grating 100 lines/mm	50 line pairs per mm ( $10\mu\text{m}$ line $10\mu\text{m}$ space)
Half protractor	$15^\circ$ Spacing Line width $20\mu\text{m}$
Grid array coarse	5mm square array with 0.5mm divisions and central 2mm square with 0.25mm divisions. Line width $20\mu\text{m}$
Grid array fine	5mm square array with 0.1mm divisions and central 2mm square with 0.05mm Divisions. Line width $8\mu\text{m}$
Dot array	Dot diameter 0.25mm, dot centre to centre spacing 0.5mm — $11 \times 11$ grid = 121 dots
Geometric progression of opaque dots, Geometric progression of opaque squares	Geometric progression of opaque squares, Geometric progression of clear dots, Geometric progression of opaque squares
Vertical scale fine variable	Overall scale length 10mm, 5mm in 0.5mm divisions, Line width $20\mu\text{m}$ , 4mm in 0.1mm divisions, Line width $10\mu\text{m}$ , 1mm in 0.01mm divisions, Line width $3\mu\text{m}$
Horizontal scale coarse	Scale length 62mm long in 2mm divisions, subdivided in 1mm divisions with a $20\mu\text{m}$ line width

**M464** Universal calibration scale PS20

## Correlative Microscopy Coverslips®

A unique film reticle for use in Correlative Microscopy with applications in LM, SEM, TEM, High Pressure Cryofixation etc. Designed to specifically allow identification and location of a particular area of interest under brightfield or fluorescence microscopy and sectioning for electron microscopy. The reticle film has been thoroughly tested with cell cultures showing good cell growth and strong adhesion to the substrate without the use of poly-L-lysine.

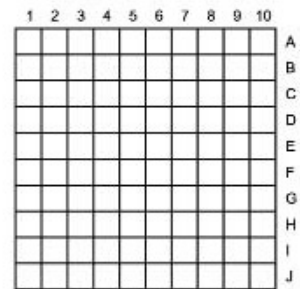
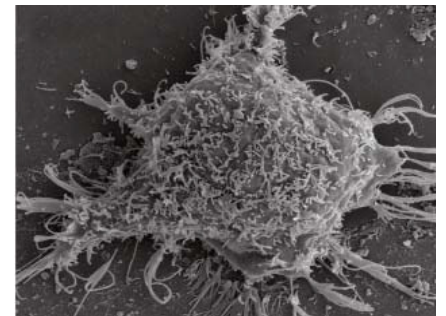
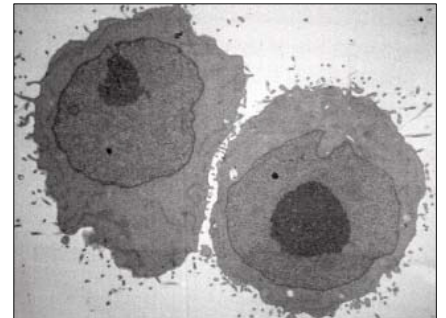
All Correlative Microscopy Coverslips® are produced on a polyester based film, 0.18mm thick, 22mm x 22mm. 25pcs per box.

### Physical and Chemical Properties

- Resistant to normal chemicals used in electron microscopy
- No oxygen retention, compatible with LR White resin
- Excellent optical quality in brightfield & UV fluorescence
- Temperature range +100°C to -196°C
- Rigid - does not float in middle of culture
- Easy to handle and cut with a knife or micro-punch
- Simple sterilisation using alcohol or UV
- Detaches easily from resin after polymerisation
- Low cost

### Using the Correlative Microscopy Coverslip

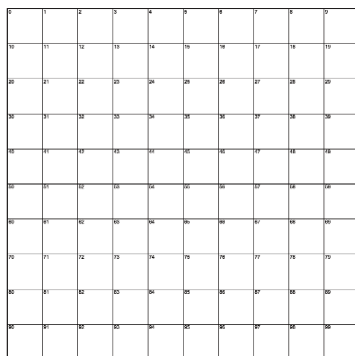
1. Sterilise the coverslip with alcohol then dry and add the culture
2. Ensure the grid is correctly positioned so the text is readable
3. Observe the cell culture using LM and identify area of interest
4. Record the images needed and note the co-ordinates of the relevant squares
5. Fix, dehydrate and embed with resin for TEM
6. After the embedding procedure invert a Polythene capsule filled with resin on the coverslip covering the cells of interest
7. Cure the resin and detach the coverslip. The footprint of the grid allows location of the position. Trim the block in the selected area and section on an ultramicrotome.



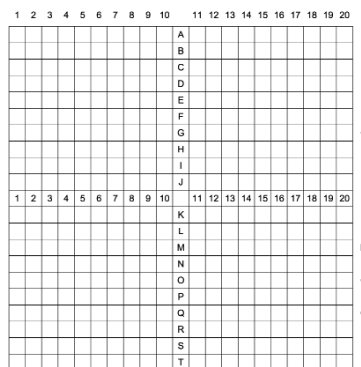
**CMC34A**  
10x10 grids of 0.1mm squares at 5 positions. Indexed 1-10 along top and A-J down side

### How to Choose the Appropriate Coverslip

Pattern Code	Number of Squares	Surface Covered	Unit Size of Each Square	Average no. of Cells/Square Unit (e.g. Hela Cell)
CMC34A	100	5 x 1mm <sup>2</sup>	0.01mm <sup>2</sup>	2-3
CMC71	200	100mm <sup>2</sup>	0.5mm <sup>2</sup>	20-25
CMC35	100	100mm <sup>2</sup>	1mm <sup>2</sup>	40-50



**CMC35**  
10x10 grids of 1mm squares. Each square individually indexed 0-99



**CMC71**  
20x20 grid of 0.5mm squares. Indexed 1-20 along top, A-T down side and on centre cross



A



B



C



D



E

### Ordering Information

- M452** CMC34A 22 x 22mm 25pcs  
**M453** CMC71 22 x 22mm 25pcs  
**M454** CMC35 22 x 22mm 25pcs