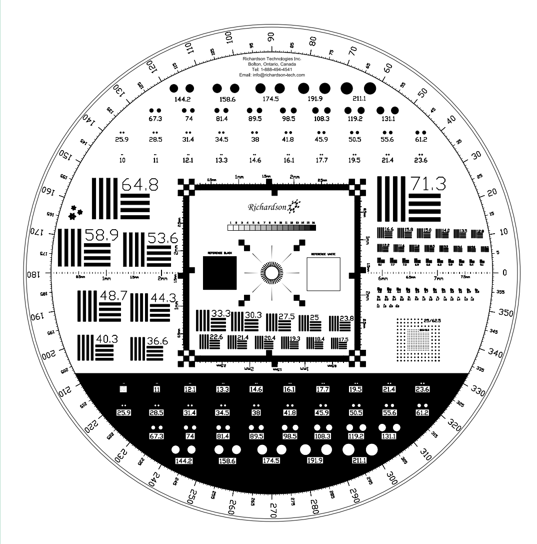
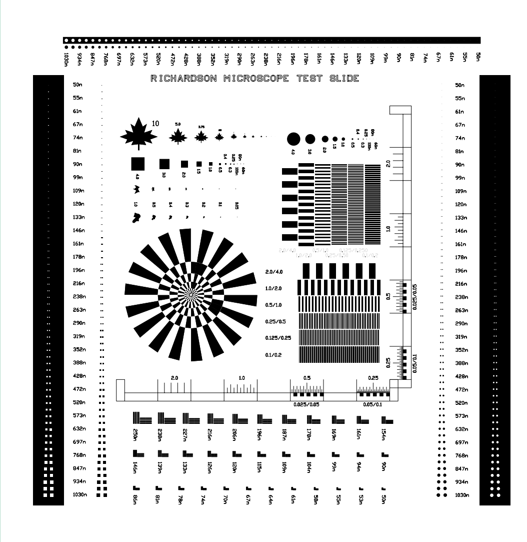
Richardson

The Richardson Test Slide Gen III

So powerful it can detect the moment of absolute certainty.



Detail of Low Magnification Pattern



Detail of High Magnification Pattern

Attune your instrument to consistently achieve the exacting performance you demand.

Richardson Microscope Test Sides deliver quick and comprehensive information on aberrations and limits of resolution.

Save money by buying one test slide with all the features you need.

Calibration, characterization and education for microscopical applications are also supported by the wide variety of reference standards, geometrical features and scales on the test slides.

Each of our test slides offer a series of sizes of several types of test objects, such as scales, gratings, squares and circles, which are used to assess the quality of an image and quickly provide easy to understand information on chromatic, spherical and other types of image aberration.

Calibrated distances, shapes and line widths provide reliable and simple calibrations of magnification, image resolution and shape identification in even the highest magnification microscope and imaging systems. Test slides are available in phase contrast, darkfield, brightfield and electron microscope versions depending on the user's applications. Slides use a fused silica or crystal silicon substrate in an anodized black aluminum slide frame. The fused silica substrate allows the test slides to be used for infrared, visible and ultraviolet imaging applications.

Benefits:

- Demonstrates best microscope performance
- Provides maintenance planning and verification
- Shows best microscope investment
- Ensures accurate measurements

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Richardson Technologies supplies a wide variety of special and custom slides.
Call for information or visit our website at **www.richardson-tech.com**

Specifications:

General

Total Pattern Diameter	8.9 mm
Wavelength Transmission Range	190 nm – 2000 nm
Shape Types	Maple leaves, circles, squares, curved shapes, sharp shapes, solid circle pairs, solid square pairs, circular aperture pairs, square aperture pairs, horizontal/vertical resolution bar sets, grid distortion patterns, grey scale, reference black and white areas, angular scale, horizontal and vertical low resolution rulings, angular grating
Substrate Material	0.525 +/- 0.05 mm thick fused silica
Slide Carrier	75x25 mm or 25x25 mm square anodized aluminum
Image Aperture	Greater than 8.0 mm
Operating Temperature Range	0 to 40° C
Acceptable Immersion Fluids	Standard immersion oils

Inner Pattern

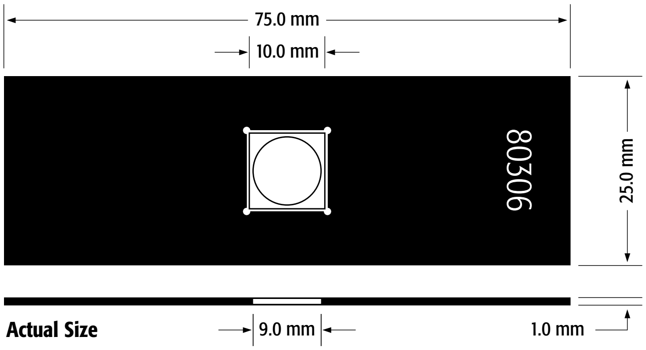
Squares	60 nm to 4 μm
Circles	60 nm to 4 μm
Maple Leaves	250 nm to 10 μm
Number of Gratings	6
Coarse Crating	2 μm lines on 4 μm spacing
Fine Grating	100 nm divisions on 200 nm centers
Pie Star Outer Diameter	40 μm
Pie Star Inner Ring Diameter	4 μm
Scale Bars	80μm with 10 μm divisions
Finest Scale	100 nm divisions on 200 nm centers
Smallest Solid Circle Pair	50 nm circles spaced 100 nm center to center
Largest Solid Circle Pair	1030 nm circles spaced 2060 nm center to center
Smallest Solid Square Pair	50 nm squares spaced 100 nm center to center
Largest Solid Square Pair	1030 nm squares spaced 2060 nm center to center
Smallest Circular Aperture Pair	50 nm circles spaced 100 nm center to center
Largest Circular Aperture Pair	1030 nm circles spaced 2060 nm center to center
Smallest Square Aperture Pair	50 nm squares spaced 100 nm center to center
Largest Square Aperture Pair	1030 nm squares spaced 2060 nm center to center
Smallest Horizontal/Vertical Resolution Bar Set	50 nm bars on 50 nm spacing
Largest Horizontal/Vertical Resolution Bar Set	250 nm bars on 250 nm spacing

Applications:

- *Light Microscopes*
  - *Brightfield*
  - *Reflected Light (Epi-illumination)*
  - *Darkfield*
  - *Phase Contrast*
  - *Differential Interference Contrast*
  - *Hoffman and LMC Contrast*
  - *Infrared Microscopy*
  - *Ultraviolet Microscopy*
- *Acoustic Microscopy*
- *Atomic Force Microscopy*
- *Confocal Microscopy*
- *Nearfield Scanning Optical Microscopy*
- *Digital Microscopy*

Outer Pattern

Smallest Solid Circle Pair	10 μm circles spaced 20 μm center to center
Largest Solid Circle Pair	211.1 μm circles spaced 422.2 μm center to center
Smallest Circular Aperture Pair	10 μm circles spaced 20 μm center to center
Largest Circular Aperture Pair	211.1 μm circles spaced 422.2 μm center to center
Smallest Horizontal/Vertical Resolution Bar Set	0.8 μm bars on 0.8 μm spacing
Largest Horizontal/Vertical Resolution Bar Set	71.3 μm bars on 71.3 μnm spacing
Grid Distortion Pattern	25 μm circles on 62.5 μm spacing 12.5 μm circles on 31.3 μm spacing
Low Resolution Horizontal and Vertical Rulings	Divisions of 1 mm, 0.5 mm, 0.1 mm and 0.05 mm
Angular Grating	Divisions of 10º, 5º, 1º and 0.5º
Grey Scale	16 division Grey Scale
Reference Black and White	100% opaque/100% transmissive squares, 600 μm x 600 μm



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Ordering Information

For more information on Richardson Technologies' Test Slides and our other landmark microscopy tools:
Call: +1-905-951-7058
1-888-494-4541 (Canada & USA only)
or visit www.richardson-tech.com

Richardson Technologies Inc.
P.O. Box 23, Bolton, Ontario, Canada
L7E 5T1

Technical Specifications:

This series of test slides is designed for light microscopy, in bright field, dark field, LMC or Hoffman contrast modes, and confocal microscopy, and are the most common and often used version of the Richardson Test Slide. The pattern consists of a very thin layer of opaque (to visible light) metal deposited on a transparent substrate made of fused silica. The metal layer is about 20 nm thick making this slide ideal for testing resolution, contrast, aberrations, depth of field and flatness of image focus. This is an amplitude test pattern, meaning the pattern blocks transmitted light and reflects incident light against a transparent background. These test slides are for use in visible light, and near IR or near UV.

Part Number	Pattern	Substrate	Cover Glass	Mount
80305 Low Magnification Die	Metalized opaque ~ 20 nm thick chromium with low magnification outer pattern	Fused Silica	None	75 x 25 x 1 mm anodized black aluminum frame
80306 Low Magnification Die	Metalized opaque ~ 20 nm thick chromium with low magnification outer pattern	Fused Silica	# 1.5 approx. 0.17mm thick	75 x 25 x 1 mm anodized black aluminum frame
80302 High Magnification Die	Metalized opaque ~ 20 nm thick chromium with low magnification outer pattern and high magnification inner pattern	Fused Silica	None	75 x 25 x 1 mm anodized black aluminum frame
80303 High Magnification Die	Metalized opaque ~ 20 nm thick chromium with low magnification outer pattern and high magnification inner pattern	Fused Silica	# 1.5 approx. 0.17 mm thick	75 x 25 x 1 mm anodized black aluminum frame
80304 High Magnification Die	Metalized opaque ~ 20 nm thick chromium with low magnification outer pattern and high magnification inner pattern	Fused Silica	# 1.5 approx. 0.17 mm thick	75 x 25 x 1 mm anodized black aluminum frame. The die is mounted on a 20 mm x 20 mm square of fused silica mounted in the square opening centered in the middle of the frame.

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Richardson Gen III Test Slide Selection Matrix

The Selection Matrix below will help you choose the most appropriate Richardson Test Slide for your needs. Simply select the option in the left column that best describes your system/application and then consider the five model choices available. Your options are graded Excellent, Good or Poor – or n/a if that option is unsuitable. The top of the grid indicates the Richardson Test Slide model number for your selection.

Matrix Legend

E:	Excellent
G:	Good
P:	Poor
n/a:	Do not use

Warning:
The test slide does not have a cover slip, therefore it cannot be cleaned and should be used in a clean room only.

The test slide has a cover slip and can be cleaned with caution.

SUPERSCRIPT NOTE

[1] Probe may stick to pattern
[2] Transmitted and reflected light
[3] Reflected light only
[4] Charging will occur unless coated

Optical Microscopy	80302	80303	80304	80305	80306
Stereo Microscopes – 1x to 20x objectives					
Stereo Microscopes	F	E	E	E	E
Machine Vision Microscopes	F	E	E	E	E
Low Power Infrared Microscopy	F	E	E	E	F
Quality Control and Calibration	F	E	E	F	E
No Cover Slip – 4x to 100x objectives					
Brightfield	E	n/a	n/a	F	n/a
Darkfield	E	n/a	n/a	F	n/a
Phase Contrast	E	n/a	n/a	F	n/a
DIC	E	n/a	n/a	F	n/a
170 µm Cover Slip – 4x to 100x objectives					
Brightfield	n/a	E	E	n/a	n/a
Darkfield	n/a	G	E	n/a	n/a
Phase Contrast	n/a	G	G	n/a	n/a
Differential Interference Contrast (DIC)	n/a	G	G	n/a	n/a
Real-Time Microscope (RTM)	n/a	G	E	n/a	n/a
Other Microscopy Technologies – 4x to 100x objectives					
Atomic Force Microscope (AFM)	E[1]	n/a	n/a	n/a	n/a
Electron Dispersion Spectrometry (EDS)	F[4]	n/a	n/a	n/a	n/a
Infrared Microscope (IR)	E[2]	n/a	n/a	n/a	n/a
Near Field Scanning Optical Microscope (NSOM)	E	n/a	n/a	n/a	n/a
Scanning Electron Microscope (SEM)	F[4]	n/a	n/a	n/a	n/a
Scanning Probe Microscope (SPM)	E	n/a	n/a	n/a	n/a
Scanning Transmission Electron Microscope (STEM)	E	n/a	n/a	n/a	n/a
Ultraviolet Light Microscope (UVM)	E[3]	n/a	n/a	n/a	n/a

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