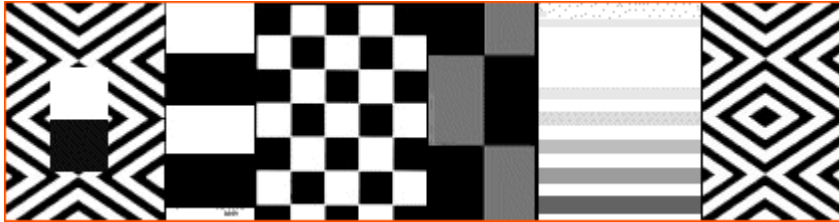


## Elcometer Leneta Test Charts



- Opacity Charts:** Used to test the hiding power of the coating, using large black and white areas.
- Penopac Charts:** Combine penetration and opacity tests in one chart.
- Display Charts:** Use diagonal patterns to help demonstrate visibly, the hiding power of a coating.
- Opacity-Display Charts:** Combines large black and white areas with diagonal patterns.
- Spreading Rate Charts:** Larger than other charts, used to measure the spreading rate of a coating.
- Brushout Cards:** Thicker paper is used for the testing of coatings applied with a brush or roller.
- Duplex Applicator Charts:** Used in conjunction with the Duplex Film Applicator to test two coatings at the same time.
- Unvarnished Charts:** Semi-porous charts which are ideal for clear coatings and stains.
- Grey Scale Charts:** A range of stripes, increasing in contrast – ideal for measuring the hiding power of a coating.
- Spray Monitors:** Self-adhesive charts, usually applied to metal panels for testing sprayed and OEM coatings.
- Scrub Test Panels:** Used to measure the abrasion of a coating, using the Elcometer 1720.
- Metopac™ Test Panels** Painted steel panels used to measure the hiding power of powder coatings.

### Leneta Test Charts

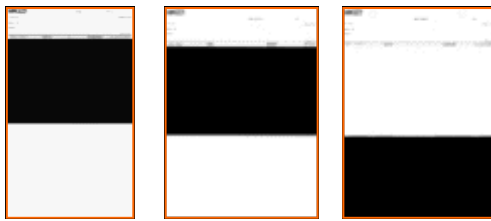
Elcometer supply a wide range of Leneta Test Charts, from plain white to those having different patterns of black and white. Produced from high quality, non-flourescent paper, free of optical brighteners that may affect colour measurements, Leneta Test Charts are the market standard in today's coatings industry.

Substrates of stainless steel or aluminium foil cards, glass and plastic are also available

Contact Elcometer for further information.

Can be used in accordance with:	
ASTM D344	ASTM D2805
ASTM D2243	ASTM D3022
DIN 53162	FTMS 141A M4121
ISO 2814	

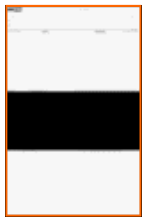
## Opacity Charts



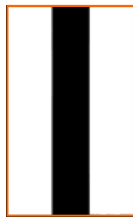
Form 2A

Form 2C

Form 5C



Form 3B



Form 15H



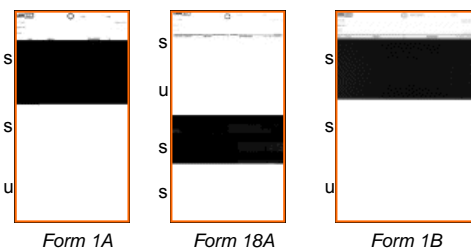
Form 14H

### Opacity Charts

The term “Opacity Chart” refers to charts on which the test pattern is a simple combination of black and white areas, large enough for wide aperture reflectance instruments, as well as for visual opacity and colour observations.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/3	Leneta Opacity Chart 2A	140 x 245	5 ½ x 10	250	K0004695M003
Elcometer 4695/4	Leneta Opacity Chart 2C	194 x 260	7 ⅝ x 10 ¼	250	K0004695M004
Elcometer 4695/6	Leneta Opacity Chart 3B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M006
Elcometer 4695/15	Leneta Opacity Chart 5C	194 x 260	7 ⅝ x 10¼	250	K0004695M015
Elcometer 4695/36	Leneta Opacity Chart 14H	286 x 438	11 ¼ x 17 ¼	125	K0004695M036
Elcometer 4695/37	Leneta Opacity Chart 15H	286 x 438	11 ¼ x 17 ¼	125	K0004695M036

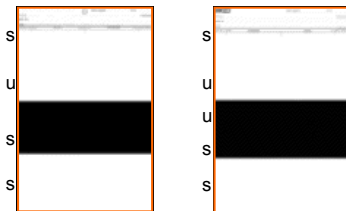
## Penopac Charts



Form 1A

Form 18A

Form 1B



Form 18B

Form 19BR

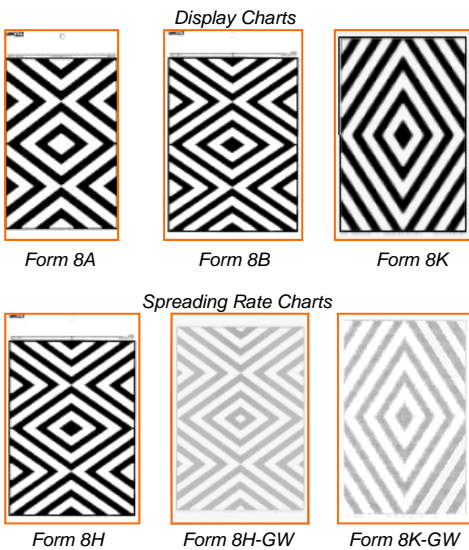
### Penopac Charts

These combine the test areas and functions of a PENetration and an OPACity chart. They can be considered as universal test charts for research, development and quality control. The choices offered in size and design are responsive to individual laboratory needs and preferences. Form 19BR includes an un-lacquered black area, but is otherwise equivalent in functionality.

s = sealed  
u = unsealed

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/1	Leneta Penopac Chart 1A	140 x 254	5 ½ x 10	250	K0004695M001
Elcometer 4695/2	Leneta Penopac Chart 1B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M002
Elcometer 4695/38	Leneta Penopac Chart 18A	140 x 254	5 ½ x 10	250	K0004695M038
Elcometer 4695/39	Leneta Penopac Chart 18B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M039
Elcometer 4695/40	Leneta Penopac Chart 19BR	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M040

## Display Charts/ Spreading Rate Charts

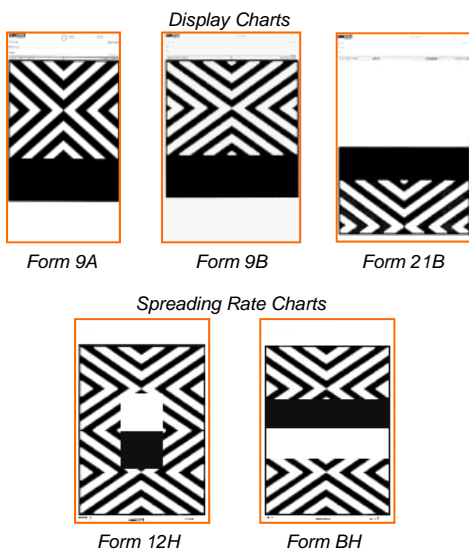


### Display Charts/ Spreading Rate Charts

These charts employ time-tested diagonally striped patterns, having a strong visual impact that emphasizes variations in film opacity. They are therefore frequently used for hiding power display purposes, by means of drawdowns or brushouts. Grey stripes in Forms 8H-GW and 8K-GW provide reduced substrate contrast for use with low hiding power coatings. Spreading Rate Charts (Forms 8H and 8H-GW) are accurately 0.1 square meters (approximately one square foot) in area, and are used in brushout hiding tests at specified spreading rates as described in ASTM Method D 344.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/21	Leneta Display Chart 8A	140 x 254	5 ½ x 10	250	K0004695M021
Elcometer 4695/22	Leneta Display Chart 8B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M022
Elcometer 4695/25	Leneta Display Chart 8K	219 x 285	8 ⅝ x 11 ¼	250	K0004695M025
Elcometer 4695/23	Leneta Spreading Rate Chart 8H	286 x 438	11 ¼ x 17 ¼	125	K0004695M023
Elcometer 4695/24	Leneta Grey / White Spreading Rate Chart 8H-GW	286 x 438	11 ¼ x 17 ¼	125	K0004695M024
Elcometer 4695/26	Leneta Grey / White Spreading Rate Chart 8K-GW	219 x 285	8 ⅝ x 11 ¼	250	K0004695M026

## Opacity-Display Charts / Spreading Rate Charts



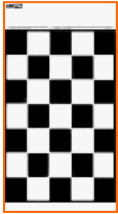
### Opacity-Display Charts / Spreading Rate Charts

Charts of this type combine the large, unbroken areas that are characteristic of Opacity Charts, with the striped design of a Display Chart. The larger areas permit wide aperture photometric measurements and visual color comparisons, while the striped area is uniquely effective for hiding power comparison and display. Spreading Rate Charts (Forms 12H and 13H) are accurately 0.1 square meters (approximately one square foot) in area, and are designed for brushout application at specified spreading rates.

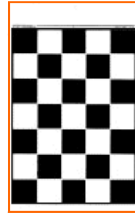
Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/27	Leneta Opacity / Display Chart 9A	140 x 254	5 ½ x 10	250	K0004695M027
Elcometer 4695/28	Leneta Opacity / Display Chart 9B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M028
Elcometer 4695/41	Leneta Opacity / Display Chart 21B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M041
Elcometer 4695/33	Leneta Spreading Rate Chart 12H	286 x 438	11 ¼ x 17 ¼	125	K0004695M033
Elcometer 4695/34	Leneta Spreading Rate Chart 13H	286 x 438	11 ¼ x 17 ¼	125	K0004695M034

## Checkerboard Charts / Spreading Rate Charts

Display Charts

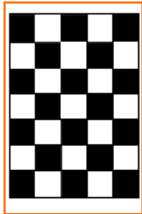


Form 10A

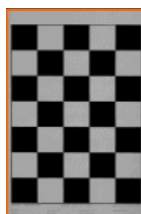


Form 10B

Spreading Rate Charts



Form 10H



Form 10H-BG

### Checkerboard Charts / Spreading Rate Charts

One of the earliest hiding power test surfaces was linoleum with a black and white checkerboard pattern. This was soon replaced by sealed paperboard charts of which Forms 10H and 10H-BG Spreading Rate Charts are typical examples. Designed for brushout tests at specified spreading rates such as in ASTM Method D 344 and Canadian 1-GP-71, they are also used for drawdown applications like their smaller counterparts Forms 10A and 10B. Black and gray squares in Form 10H-BG provide reduced contrast for testing coatings with lower hiding power.

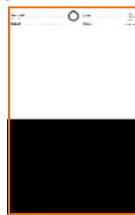
Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/29	Leneta Checkerboard Chart 10A	140 x 254	5 ½ x 10	250	K0004695M029
Elcometer 4695/30	Leneta Checkerboard Chart 10B	194 x 289	7 ⅝ x 11 ⅜	250	K0004695M030
Elcometer 4695/32	Leneta Checkerboard Spreading Rate Chart 10H	286 x 438	11 ¼ x 17 ¼	125	K0004695M032
Elcometer 4695/31	Leneta Checkerboard Spreading Rate Chart 10H-BG	286 x 438	11 ¼ x 17 ¼	125	K0004695M031

## Brushout Cards

Display Charts

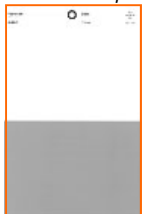


Form 2DX

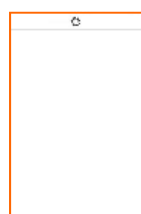


Form 5DX

Spreading Rate Charts



Form 5DX-GW



Form WDX

### Brushout Cards

Designed for informal brushout applications, the paper stock is almost twice the thickness of regular chart paper to give greater rigidity for more convenient handling - nominal thickness: 0.5 mm (20 mils).

Brushout Cards are also used widely for drawdowns and colorimetric measurements.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/5	Leneta Brushout Chart 2DX	98 x 152	3 ⅞ x 6	500	K0004695M005
Elcometer 4695/16	Leneta Brushout Chart 5DX	98 x 152	3 ⅞ x 6	500	K0004695M016
Elcometer 4695/17	Leneta Chart 5DX-GW	98 x 152	3 ⅞ x 6	500	K0004695M017
Elcometer 4695/102	Leneta Plain White Card WDX	98 x 152	3 ⅞ x 6	500	K0004695M102

## Duplex Applicator Cards



Form 6F6



Form 6F4



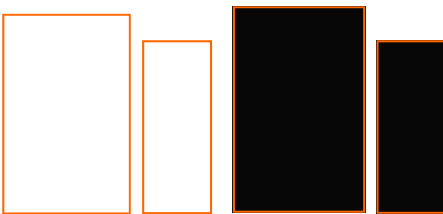
Form WF

### Duplex Applicator Cards

Originally made to be used with the Duplex Film Applicator, an instrument designed for rapid production of side-by-side drawdowns, they now serve mostly as generic paint test charts.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/18	Leneta Chart 6F4	76 x 184	3 x 7 ¼	500	K0004695M018
Elcometer 4695/19	Leneta Duplex Applicator Chart 6F6	76 x 184	3 x 7 ¼	500	K0004695M019
Elcometer 4695/103	Leneta Plain White Chart WD	76 x 184	3 x 7 ¼	1000	K0004695M101

## Plain White & Plain Black Chart Cards



Plain White & Plain Black Chart Cards

### Plain White & Plain Black Chart Cards

Originally made to be used with the Duplex Film Applicator, an instrument designed for rapid production of side-by-side drawdowns, they now serve mostly as generic paint test charts.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/100	Leneta Plain White Chart WBX - 0.5mm (20mils)	194 x 286	7 ⅝ x 11 ¼	125	K0004695M100
Elcometer 4695/102	Leneta Plain White Chart WDX - 0.5mm (20mils)	98 x 152	3 ⅞ x 6	500	K0004695M102
Elcometer 4695/106	Leneta Plain White Chart WHX - 0.5mm (20mils)	286 x 438	11 ¼ x 17 ¼	75	K0004695M106
Elcometer 4695/108	Leneta Plain White Chart WKX - 0.5mm (20mils)	219 x 286	8 ⅝ x 11 ¼	125	K0004695M108
Elcometer 4695/98	Leneta Plain White Chart WA - 0.3mm (12 mils)	140 x 254	5 ½ x 10	250	K0004695M098
Elcometer 4695/99	Leneta Plain White Chart WB - 0.3mm (12 mils)	194 x 286	7 ⅝ x 11 ½	250	K0004695M099
Elcometer 4695/101	Leneta Plain White Chart WF - 0.3mm (12 mils)	76 x 184	3 ⅞ x 6	500	K0004695M103
Elcometer 4695/104	Leneta Plain White Chart WG - 0.3mm (12 mils)	76 x 140	3 x 5 ½	1000	K0004695M104
Elcometer 4695/105	Leneta Plain White Chart WH - 0.3mm (12 mils)	286 x 438	11 ¼ x 17 ¼	125	K0004695M105
Elcometer 4695/107	Leneta Plain White Chart WK - 0.3mm (12 mils)	219 x 286	8 ⅝ x 11 ¼	250	K0004695M107
Elcometer 4695/109	Leneta Plain White Chart WM - 0.3mm (12 mils)	140 x 286	5 ½ x 11 ¼	250	K0004695M109
Elcometer 4695/49	Leneta Plain Black Chart BH - 0.3mm (12 mils)	219 x 286	8 ⅝ x 11 ¼	125	K0004695M049
Elcometer 4695/50	Leneta Plain Black Chart BK - 0.3mm (12 mils)	286 x 438	11 ¼ x 17 ¼	250	K0004695M050

## Unvarnished Test Charts



Form N2C    Form N2A    Form N9A    Form NWK

### Unvarnished Test Charts

Un-lacquered Test Charts are ideal for testing applications of clear coatings and stains.

The un-lacquered (semi-porous) surface simulates wood or unsealed wallboard.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/65	Leneta Unvarnished Chart N2C	194 x 260	7 5/8 x 10 1/4	250	K0004695M065
Elcometer 4695/64	Leneta Unvarnished Chart N2A	140 x 254	5 1/2 x 10	250	K0004695M064
Elcometer 4695/66	Leneta Unvarnished Chart N9A	140 x 254	5 1/2 x 10	250	K0004695M066
Elcometer 4695/67	Leneta Unvarnished Chart NWK	219 x 286	8 5/8 x 11 1/4	250	K0004695M067

## Grey Scale Charts



Form CU-1

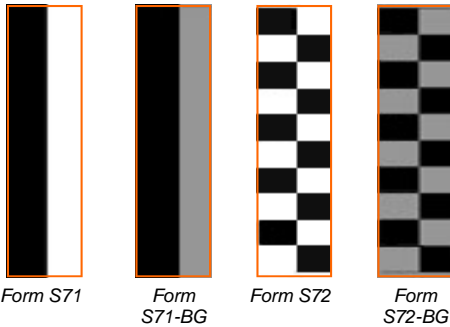
Form 24-B

### Grey Scale Charts

These are sealed paint test charts with six stripes on a white field, ranging in shade from very light gray to black. The stripes are numbered 1 to 6, representing uniform steps of increasing contrast. The hiding power of the applied coatings is rated as the number of the darkest stripe that is completely (or almost completely) obscured, at a specified thickness or spreading rate. Form CU-1 is used for more practical large-area brush or roller applications as in ASTM D5150. Applications on Form 24B are with a drawdown blade.

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/53	Leneta Chart CU-1	610 x 946	24 x 37 1/4	100	K0004695M053
Elcometer 4695/43	Leneta Chart 24B	194 x 289	7 5/8 x 11 3/8	250	K0004695M043

## Spray Strips – Hiding Power for OEM Coatings



### Spray Strips – Hiding Power for OEM Coatings

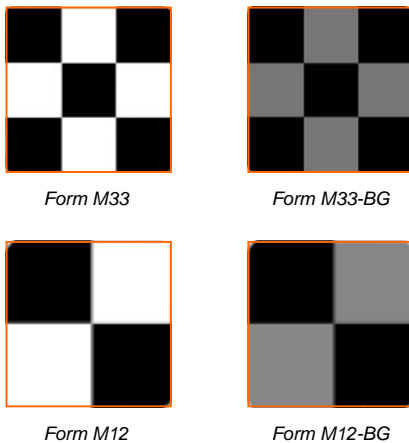
These are used by industrial coatings laboratories, principally those involved with the automotive industry, to measure the hiding power of spraying enamels. The chart is attached to a steel panel and the test coating sprayed to produce a “wedge” varying from thin at one end to thick at the other.

After drying, a location on the chart of adequate visual hiding or 0.98 contrast ratio is determined, and the film thickness measured electronically on the steel panel adjacent to that location. Conversely, a location of specified thickness is determined on the steel panel and the Contrast Ratio measured adjacent to that location.

Available in Black/ White, Grey/ White and, for the S71, Red/Grey

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/89	Leneta Black / White Spray Strips S71	51 x 279	2 x 11	500	K0004695M089
Elcometer 4695/90	Leneta Black / Grey Spray Strips S71-BG	51 x 279	2 x 11	500	K0004695M090
Elcometer 4695/91	Leneta Red / Grey Spray Strips S71-RG	51 x 279	2 x 11	500	K0004695M091
Elcometer 4695/92	Leneta Black / White Spray Strips S72	51 x 279	2 x 11	500	K0004695M092
Elcometer 4695/93	Leneta Back / Grey Spray Strips S72-BG	51 x 279	2 x 11	500	K0004695M093

## Spray Monitors – Self Adhesive Hiding Power



### Spray Monitors – Self Adhesive Hiding Power Labels

These are pressure sensitive labels with a hiding power test pattern and a sealed, solvent-resistant surface. They are used primarily with metal panels on which the uniform surface provides no visual clue as to the thickness of an applied paint film.

When placed on such a surface the Monitor presents a contrasting feature by which to observe the hiding during spray application, thereby facilitating film thickness control. It adheres firmly whether air-dried or baked, to present a permanent visual record of film opacity.

Available in Black/ White, Grey/ White and also Red/Grey (not shown).

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/59	Leneta Spray Monitor (Black / White) M33	51 x 51	2 x 2	500	K0004695M059
Elcometer 4695/58	Leneta Spray Monitor (Black / Grey) M33-BG	51 x 51	2 x 2	500	K0004695M058
Elcometer 4695/60	Leneta Spray Monitor (Red / Grey) M33-RG	51 x 51	2 x 2	500	K0004695M060
Elcometer 4695/56	Leneta Spray Monitor (Black / White) M12	25 x 25	1 x 1	2000	K0004695M056
Elcometer 4695/55	Leneta Spray Monitor (Black / Grey) M12-BG	25 x 25	1 x 1	2000	K0004695M055
Elcometer 4695/57	Leneta Spray Monitor (Red / Grey) M12-RG	25 x 25	1 x 1	2000	K0004695M057
Elcometer 4695/61	Leneta Spray Monitor (Black / White) M71	51 x 279	2 x 11	500	K0004695M061
Elcometer 4695/62	Leneta Spray Monitor (Black / Grey) M71-BG	51 x 279	2 x 11	500	K0004695M062
Elcometer 4695/63	Leneta Spray Monitor (Black / White) M72	51 x 279	2 x 11	500	K0004695M063
Elcometer 4695/79	Leneta Spray Monitor (Black / Grey) M72-BG	51 x 279	2 x 11	500	K0004695M079

# Scrub Test Panels – Plastic-Vinyl Chloride / Acetate Copolymer



Form P121-10N



Fig 1. Typical failure using shim per ASTM D2486 Method A



Fig 2. Typical failure without shim

## Scrub Test Panels – Plastic-Vinyl Chloride / Acetate Copolymer

In a typical scrub test, the coating is applied to the Leneta Scrub Test Panel at a specified film thickness, allowed to dry, then subjected to scrubbing with a straight-line scrub tester.

In ASTM D2486, a 10 mil shim is inserted under the panel to accelerate failure and thereby reduce testing time. The scrub resistance is the number of scrub cycles required to remove the coating to a specified end point. Alternatively, the loss in weight is determined after a specified number of scrub cycles as a measure of scrub resistance, with calculation of equivalent loss in film thickness.

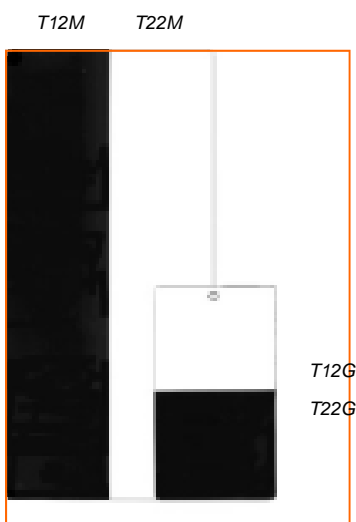
Used in ASTM D 2486, ASTM D 4213, ISO 11918 and Other Scrub Test Methods.

Fig. 1 and Fig. 2 show actual tests of latex flat paints. Note the films have worn down to a feather edge, with

Can be used with the Elcometer 1720 Washability / Scrubability Abrasion Tester

Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/68	Leneta Black Scrub Test Panel P121-10N - 0.25 mm thick	165 x 432	6 ½ x 17	100	K0004695M068
Elcometer 4695/69	Leneta White Scrub Test Panel P122-10N - 0.25 mm thick	165 x 432	6 ½ x 17	100	K0004695M069

# Metopac™ Metal Test Panels



## Metopac™ Metal Test Panels

Painted steel panels, used for measuring the hiding power of powder coatings and industrial enamels. Available in half black / half white and all black.

*The black surface: Solvent resistant, Non-bleeding, Reflectance - 1% maximum - measured using ASTM Method E1347*

*White Surface: Solvent Resistant, Color Retentive, Reflectance - 80% minimum measured using ASTM Method E1347*

Major uses include:

- ASTM Method D6441 - Measuring the Hiding Power of Powder Coatings
- Powder Coatings Institute Method
- ASTM Method D2805 - Hiding Power of Paints by Reflectometry

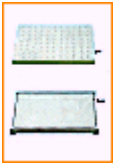
Model	Description	Dimensions		Quantity per Pack	Part Number
		mm	inches		
Elcometer 4695/94	Leneta Metopac™ Panel (Black & White) T12G	76 x 132	3 x 5 3/16	125	K0004695M094
Elcometer 4695/95	Leneta Metopac™ Panel (Black & White) T12M	132 x 279	5 3/16 x 11	50	K0004695M095
Elcometer 4695/96	Leneta Metopac™ Panel (Black) T22G	76 x 132	3 x 5 3/16	125	K0004695M096
Elcometer 4695/97	Leneta Metopac™ Panel (Black) T22M	132 x 279	5 3/16 x 11	50	K0004695M097

## Related products



Elcometer 4330

This simple automatic film applicator is supplied with a system for fixing spiral bar applicators, or other Elcometer film applicators. Samples are secured with a simple clamp and three buttons control the operation and direction of the applicator.



Elcometer 4800 & 4900

When applying a coating for testing, it is necessary to fix the substrate firmly - especially if the substrate is thin. These vacuum tables are ideal and create the ideal surface for manually applying films to thin and thick substrates alike.



Elcometer 4340

When preparing a wide range of samples with different coatings and on various substrates, the Elcometer 4340 film applicator is the unit for you. Designed with 11 pre-set speeds, coatings can be applied with total consistency. A range of tables and adaptations can be selected. Vacuum, electromagnetic or heated tables, drying time recorders and gelatine devices are available.



Elcometer 1720

This robust and easy to use Abrasion Tester is extremely flexible and is designed to test the washability, brushability and abrasion resistance of a wide range of materials, including paint, laquers, inks, coatings and much much more. Unlike most washability testers, this unit is easy to set up and is available as either a 2 or 4 station model and can measure on flat or curved surfaces.

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