

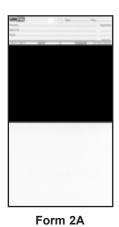


Test Charts & Test Equipment for the Paint and Coatings Industy

Catalog No. 6

Opacity Charts

The term "Opacity Chart", as used in this catalog, 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 color observations. Leneta opacity charts comply with all test methods specifying charts of such design.



5-1/2 x 10 in 140 x 254 mm

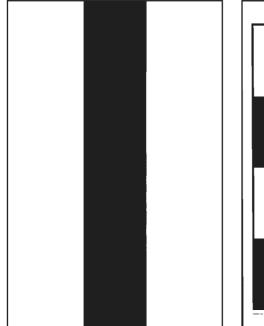
Form 2C 7-5/8 x 10-1/4 in 194 x 260 mm

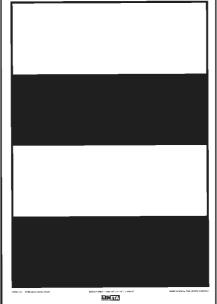


Form 5C 7-5/8 x 10-1/4 in 194 x 260 mm



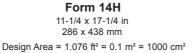
Form 3B 7-5/8 x 11-3/8 in 194 x 289 mm

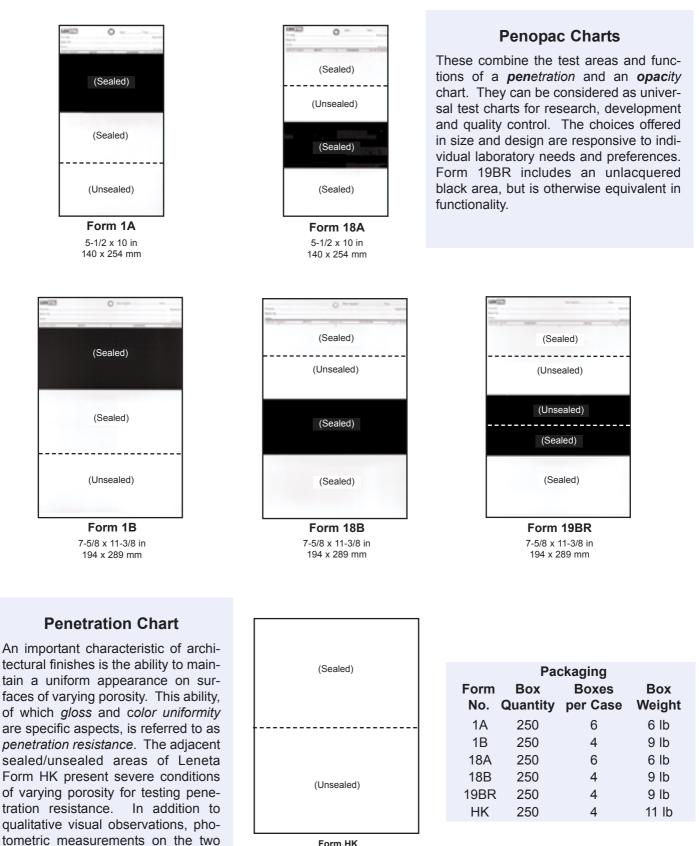




PACKAGING							
Form No.	Box Quantity	Boxes per Case	Box Weight				
2A	250	6	6 lb				
2C	250	4	9 lb				
3B	250	4	9 lb				
5C	250	4	9 lb				
14H	125	4	11 lb				
15H	125	4	11 lb				

Form 15H 11-1/4 x 17-1/4 in 286 x 438 mm





Form HK 8-5/8 x 11-1/4 in 219 x 286 mm

areas provide objective numerical

values.

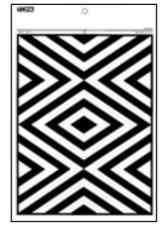
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Display Charts / Spreading Rate Charts

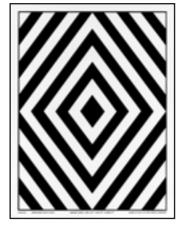
These charts employ time-tested diagonally striped patterns, having a strong visual impact that emphasizes variations in film opacity. They are therefore frequently used for hiding power display purposes, by means of drawdowns or brushouts. Gray stripes in Forms 8H-GW and 8K-GW provide reduced substrate 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.



Form 8A 5-1/2 x 10 in 140 x 254 mm Design Area = 275 cm²



Form 8B 7-5/8 x 11-3/8 in 194 x 289 mm Design Area = 425 cm²



Form 8K 8-5/8 x 11-1/4 in 219 x 285 mm Design Area = 500 cm²

Spreading Rate Charts Design Area = 1.076 ft² (1000 cm²)

Form 8H 11-1/4 x 17-1/4 in 286 x 438 mm



Form 8H-GW 11-1/4 x 17-1/4 in 286 x 438 mm

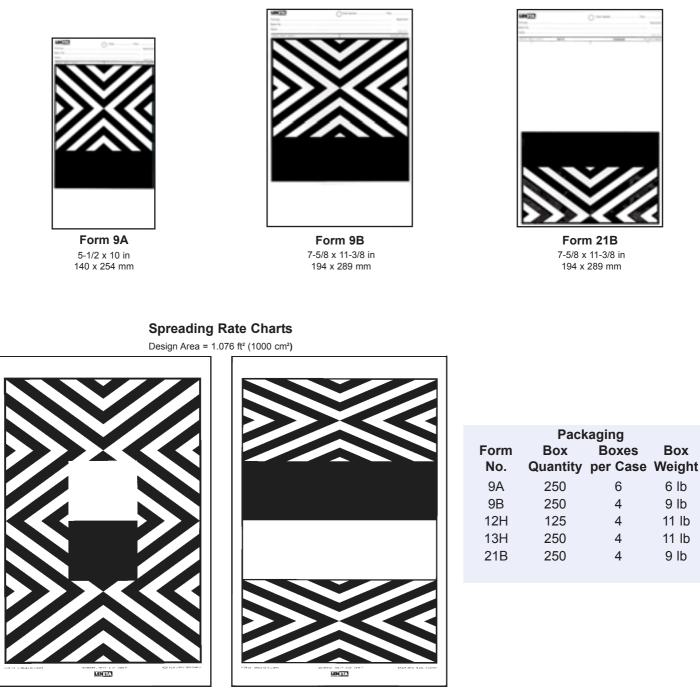


Form 8K-GW 8-5/8 x 11-1/4 in 219 x 285 mm Design Area = 500 cm²

PACKAGING								
Form No.	Box Quantity	Boxes per Case	Box Weight					
8A	250	6	6 lb					
8B	250	4	9 lb					
8H	125	4	11 lb					
8H-GW	125	4	11 lb					
8K	250	4	11 lb					
8K-GW	250	4	11 lb					

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.



Box

6 lb

9 lb

11 lb

11 lb 9 lb

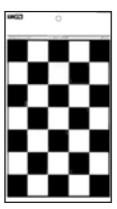
Form 12H 11-1/4 x 17-1/4 in 286 x 438 mm

Rev 200201151434

Form 13H 11-1/4 x 17-1/4 in 286 x 438 mm

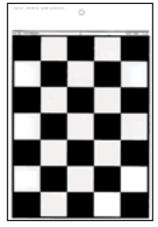
Checkerboard Charts / Spreading Rate Charts

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.



Rev 200201151440

Form 10A 5-1/2 x 10 in 140 x 254 mm Design Area = 275 cm²

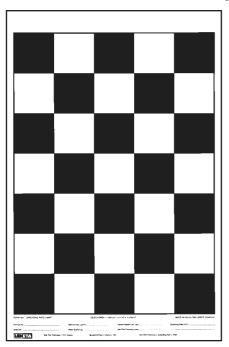


Form 10B 7-5/8 x 11-3/8 in 194 x 289 mm Design Area = 425 cm²

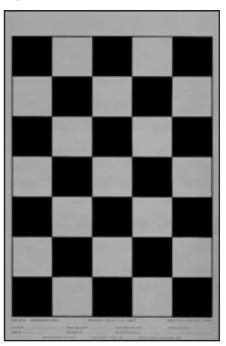
Packaging							
Form No.	Box Quantity	Boxes per Case	Box Weight				
10A	250	6	6 lb				
10B	250	4	9 lb				
10H	125	4	11 lb				
10H-BG	5 125	4	11 lb				

Spreading Rate Charts

Design Area = 1.076 ft² (1000 cm²)



Form 10H 11-1/4 x 17-1/4 in 286 x 438 mm



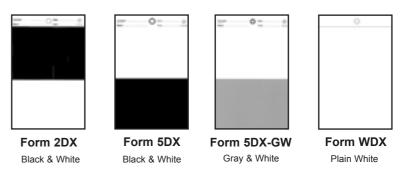
Form 10H-BG 11-1/4 x 17-1/4 in 286 x 438 mm

Brushout Cards

Nominal Thickness: 20 mils (0.5 mm)

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. They are also used widely for drawdowns and colorimetric measurements.

Form	Box	Boxes	Box
No.	Quantity	per Case	weight
2DX	500	4	7 lb
5DX	500	4	7 lb
5DX-GW	/ 500	4	7 lb
WDX	500	4	7 lb



Size: 3-7/8 x 6 inches (98 x 152 mm)-

Duplex Applicator Charts

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

Form No.	Charts per Box	Boxes per Case	Box Weight
6F6	500	6	5 lb
6F4	500	6	5 lb
WF	500	6	5 lb

	1		
	1		
orm 6F4	ļ	Form	WF
11 inchoo	(76 v 194	mm)	
		Form 6F4	Form 6F4 Form /4 inches (76 x 184 mm)

Plain White Cards	Form No.	Siz Inches	e Millimeters	Box Quantity	Boxes Per Case	Weight Per Box
Nominal Thickness: 20 mils (0.5 mm)	*WBX	7-5/8 x 11-1/4	194 x 286	125	4	7 lb
	*WDX	3-7/8 x 6	98 x 152	500	4	7 lb
	WKX	8-5/8 x 11-1/4	219 x 286	125	4	8 lb
	WHX	11-1/4 x 17-1/4	286 x 438	75	4	10 lb
Plain White Charts	*WA	5-1/2 x10	140 x 254	250	6	6 lb
	*WB	7-5/8 x 11-1/2	194 x 286	250	4	10 lb
Nominal Thickness: 12 mils (0.3 mm)	*WD	3-7/8 x 6	98 x 152	1000	4	10 lb
	WF	3 x 7-1/4	76 x 184	500	6	5 lb
	WG	3 x 5-1/2	76 x 140	1000	4	8 lb
	WH	11-1/4 x 17-1/4	286 x 438	125	4	11 lb
	WK	8-5/8 x 11-1/4	219 x 286	250	4	11 lb
	WM	5-1/2 x 11-1/4	140 x 286	250	6	6 lb
Plain Black Charts	BK BH	8-5/8 x 11-1/4 11-1/4 x 17-1/4	219 x 286 286 x 438	250 125	4 4	11 lb 11 lb
Nominal Thickness: 12 mils (0.3 mm)	**B-3	5-5/8 x 32	143 x 813	200		18 lb

* Indicates convenience hole at top. ** Specified for Dupont Paintbrush Evaluation Test Special sizes available upon request.

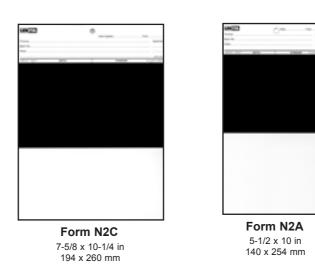
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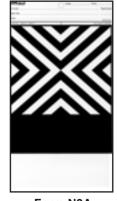
Plair

Unlacquered Test Charts

For Test Applications of Clear Coatings and Stains

Unlacquered (semi-porous) surface simulates wood or unsealed wallboard.



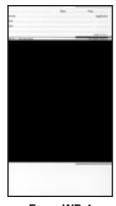


Form N9A 5-1/2 x 10 in 140 x 254 mm

ALSO: FORM NWK, Plain white -- Size: 8-5/8 x 11-1/4 in (219 x 286 mm)

Wax and Polish Test Chart

Super-Smooth Jet Black Very Dull, Matte Finish



Form WP-1 5-1/2 x 10 in 140 x 254 mm

PACKAGING								
Form No.	Box Quantity	Boxes per Case	Box Weight					
N2C	250	4	9 lb					
N2A	250	6	6 lb					
N9A	250	6	6 lb					
NWK	250	4	11 lb					
WP-1	250	6	6 lb					

For rapid and precise hiding power measurements.

These charts have a unique surface which is readily wetted by waterborne or solventborne paints, but from which the dried film can easily* be stripped with adhesive tape. The stripping feature permits the dry film weight on a measured area to be determined precisely by weighing on an analytical balance before and after film removal. The spreading rate (H) and wet film thickness (T) can then be calculated from the following simple relationships:

> $H(m^{2}/L) = \frac{A(cm^{2}) \cdot N \cdot D(kg/L)}{10 M(g)}$ $H(ft^2/gal) = 40.746H(m^2/L)$ $H(ft^2/gal) \times T (mils) = 1604.2$

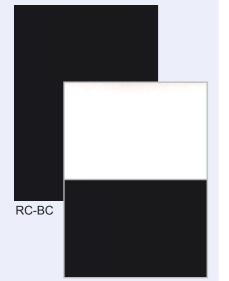
where:

- H = spreading rate (m^2/L) , (ft^2/gal) . T = wet film thickness (µm), (mils)
- A = test area (cm^2)
- D = paint density (kg/L)
- M = dry film weight (g)
- N = non-volatile fraction by weight of the applied paint

This procedure represents a break-through in reduced time for precise measurement of spreading rate (or wet film thickness) in the determination of hiding power.

* Not so easily as to produce undamaged free films. For that purpose use Form RP-1K release paper described on page 20.

Form	Color	Dimensions	Box Quantity	Boxes Per Case	Weight Per Box
RC-5C	Black & White	7-5/8 x 10-1/4 inch 194 x 260 mm	250	4	9 lb
RC-BC	All Black	7-5/8 x 10-1/4 inch 194 x 260 mm	250	4	9 lb

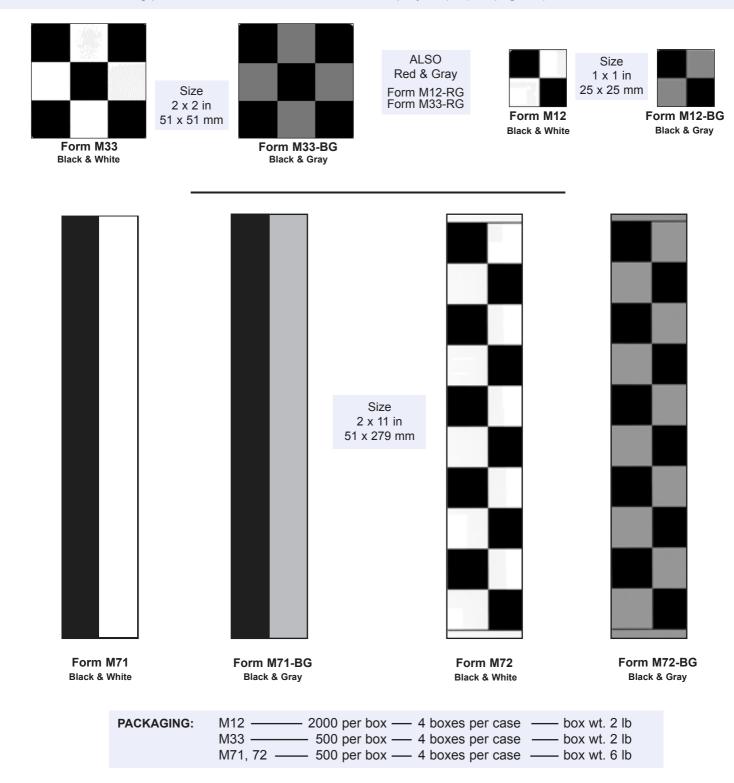


RC-5C

Spray Monitors

Self-Adhering 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. The longer Monitors, M71 and M72, permit wedge application, with thickness and hiding power determination, as described with Spray Strips (see page 14).



Painted Steel Panels for Measuring the Hiding Power of Powder Coatings and Industrial Enamels

Black Surface: Solvent resistant, Non-bleeding, Reflectance - 1% maximum* White Surface: Solvent Resistant, Color Retentive, Reflectance - 80% minimum* * Measured using ASTM Method E 1347

Form No.	Color	Area**	Size	Box Quantity	Boxes Per Case	Weight Per Box
T12G	Black & White	100 cm ²	3 x 5-3/16 inch	125	4	8 lb
			76 x 132 mm			
T22G	Black	100 cm ²	3 x 5-3/16 inch	125	4	8 lb
			76 x 132 mm			
T12M	Black & White	368 cm ²	5-3/16 x 11 inch	50	4	4 lb
			132 x 279 mm			
T22M	Black	368 cm ²	5-3/16 x 11 inch	50	4	2 lb
			132 x 279 mm			

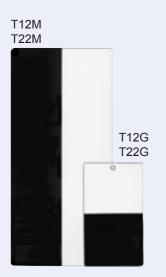
**Allowing for 1/4 inch (6mm hole.)

Major uses include:

ASTM Method D 6441 -- Measuring the Hiding Power of Powder Coatings -- A wedge shape film is applied on a T12G or T12M panel. Points of specified film thickness are located over the black and white areas, reflectances are measured and the mean contrast ratio at that film thickness is calculated. Alternatively, several black/white pairs of equal-thickness points at various film thicknesses are located, and the calculated contrast ratio plotted graphically against the film thickness to obtain the film thickness at a contrast ratio of 0.98. In this method the reflectance is measured with a small diameter aperture (e.g. 4 mm), and the film thickness with an electronic film thickness gage.

Powder Coatings Institute Method -- In this method the film thickness is determined directly on a T12G panel at 0.98 Contrast Ratio. Alternatively, the Contrast Ratio is determined at a specified film thickness. Reflectance and film thickness instrumentation are as in ASTM D 6441.

ASTM Method D 2805 -- *Hiding Power of Paints by Reflectometry* -- The film is applied uniformly over a T22G all black and a T12G black and white panel. The filmweight and reflectance R_0 are determined on the all black panel, and the reflectivity R_{∞} of the coating determined on the black and white panel. The gravimetric spreading rate at 0.98 Contrast Ratio is then calculated using Kubelka-Munk equations. Conversion to volumetric spreading rate or to film thickness is readily accomplished.



Clear Polyester

This clear film can be used as a substrate for the application of a coating and viewed for transmitted appearance properties including color, gloss and transparency, or placed over a black and white background for evaluation of hiding power. In addition, it is used as an overlay to protect a drawdown after drying, without obscuring visibility.

Form	Thick	ness	Size	9	Box	Boxes	Weight
No.	mils	μm	inches	mm	Quantity	Per Case	Per Box
P300-1K	1	25	8-1/2 x 11	216 x 279	250	4	1 lb
P300-2K	2	50	8-1/2 x 11	216 x 279	250	4	1 lb
P300-4C	4	100	7-5/8 x 10-1/4	76 x 140	125	4	3 lb
P300-4G	4	100	3 x 5-1/2	76 x 140	250	4	2 lb
P300-4N1	Г 4	100	5 x 7-5/8	127 x 194	250	4	3 lb
P300-7C	7	175	7-5/8 x 10-1/4	194 x 260	125	4	4 lb
P300-7G	7	175	3 x 5-1/2	76 x 140	250	4	2 lb
P300-7N1	Γ7	175	5 x 7-5/8	127 x 194	250	4	4 lb

If you would like a size other than those shown above, please contact us for a quote.

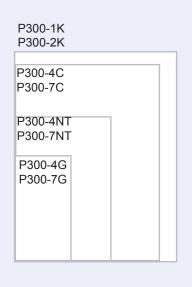
Alu-Cards - Aluminum foil laminated to paperboard panels

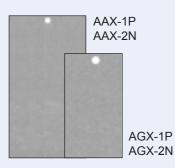
These are low cost metallic substrates to replace expensive solid metal panels when the primary interest is in appearance. The test surface has a high metallic luster. The cards are 18 mils (0.46 mm) thick and have a $^{1}/_{4}$ inch (6.4 mm) diameter hole punched in one end. In addition to lower cost, a major advantage over regular metal panels is that they are much lighter in weight and therefore more conveniently stored. See page 27 for Spray Stand and Adapters used in spray applications on these panels.

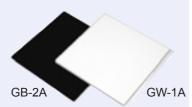
Form	Size		Box	Boxes	Weight
No.	inches	mm	Quantity	Per Case	Per Box
AAX-1P Primed ¹	5-1/2 x 10	140 x 254	125	6	5 lb
AAX-2N Unprimed ²	5-1/2 x 10	140 x 254	125	6	5 lb
AGX-1P Primed ¹	3 x 5-1/2	76 x 140	500	6	6 lb
AGX-2N Unprimed ²	3 x 5-1/2	76 x 140	500	6	6 lb

1. Clear organic primer for improved adhesion.

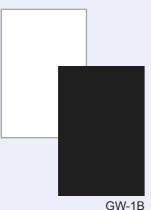
2. Foil both sides for minimum bake distortion. Bright side is conductive.











Carrara* Glass Panels - Approximately 0.25 inch (6mm) thick

Black glass is used in widely referenced high-precision ASTM Method D 2805, and related hiding power test methods. After measuring the reflectance R_0 of the dry film, a defined area is scraped from the glass and weighed to obtain the spreading rate or original wet film thickness. R_{∞} of the paint film is obtained from a separate test application. The hiding power is then calculated from the appropriate Kubelka-Munk equations found in the ASTM method.

Both black and white Carrara glass panels are used in U.S. Federal Test Method 141-4122 and CGSB Method 1-GP-71-14.7 for measuring hiding power. The latter method also provides for direct wet film thickness measurements using a Pfund or Interchemical type of wet film thickness gage, as described in ASTM Method D 1212.

These methods depend on the unique hardness and levelness characteristics of glass substrates. Leneta black Carrara glass is much superior in levelness to previously available striated types.

	White One Side Striated	Black Unstriated - Blacklite**	Size	Box Quantity	Weight Per Box
Item No.	GW-1A	GB-2A	8 x 8 in	Quantity	2 lb
			200 x 200 mm		
Item No.	GW-1B	GB-2B	8 x 12 in	1	3 lb
			200 x 300 mm		

* *Carrara:* Term used originally in referring to the white marble obtained from quarries near the town of Carrara in central Italy; later applied to heavy architectural glass, both black and white.

** Blacklite: Refers to Leneta type of black Carrara glass

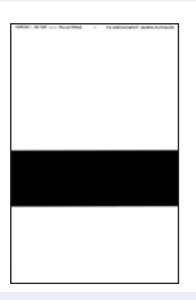
Release Paper

Release Paper - For preparing free films of organic coatings

This paper is sealed on both sides, one side glossy and the other matte. The glossy side has a silicone finish with balanced release, to avoid excessive crawling of solventborne or waterborne coatings, while permitting easy stripping of dried films. It is recommended in ASTM D 4708 "Standard Practice for Preparation of Uniform Free Films of Organic Coatings" and can be used to prepare test films for ASTM D 2370 "Tensile Strength of Organic Coatings", ASTM D 1653 "Water Vapor Transmission of Organic Coatings Films", and other free-film test methods.

RP-1K

Form No.	Size	Thickness	Box Quantity	Boxes Per Case	Weight Per Box
RP-1K	8-5/8 x 11-1/4 in 219 x 286 mm	5 mil 127 µm	250	4	8 lb



Available in nine different grades of paper, these sheets provide a variety of substrates for testing ink qualities. They are also useful for testing other coatings because of their range in absorbancy and texture.

Sheet Size:	5 x 7-5/8 in (127 x 194 mm)
Paper:	Non-fluorescent. Unwatermarked
Ink:	Jet black. Non-bleeding.
Padding:	100 sheets per pad.
Packaging:	1000 sheets (10 pads) per box

Paper Description¹ and Form Number Identification

Form Number	3NT-1	3NT-2	3NT-3	3NT-4	3NT-5	3NT-6	3NT-7	3NT-8	3NT-9⁴
Paper Type	Vellum Opaque	Translucent Bond ²	Coated Book	Regular Bond	Unbleached Kraft	Transparent Bond ²	Newsprint	Web Offset Coated	Box Laminate
Shade	Neutral White	Neutral White	Neutral White	Neutral White	Brown	Neutral White	Cream White	Neutral White	Mottled White
Basis Ream Weight ³	60 lb	15 lb	80 lb	20 lb	40 lb	14 lb	32 lb	45 lb	125 lb
Basis Sheet size (in)	25 x 38	17 x 22	25 x 38	17 x 22	24 x 36	17 x 22	24 x 36	25 x 38	14 x 36
Poundage (lb/Mft ²)	18.2	11.6	24.2	15.4	13.3	10.8	10.7	13.6	41.7
Grammage (g/m ²)	89	56	118	75	65	53	52	67	203
Caliper (mils)	5.0	2.5	3.7	3.9	4.0	2.0	3.0	2.5	10.0
Caliper (µm)	127	64	94	99	102	51	76	64	254
Density (g/cm3)	0.70	0.89	1.26	0.76	0.64	1.04	0.68	1.05	0.80
Boxes per case Box weight (lb)	5 6	6 4	6 8	6 5	5 5	6 5	6 4	6 5	4 3

Available on request: Forms 3NT-3 and 3NT-4 in special sizes for ink proofers, printed or unprinted.

Notes: 1. Indicated weights, densities and calipers are nominal and/or approximate.

2. These papers are absorbent despite their high level of transparency.

3. Ream of 500 basis sheets.

4. This is a laminate of white on brown kraft paper, representative of white corrugated

box surfaces, and showing a typical mottled appearance. 500 sheets/box, unpadded.

Clear Polyester Overlay Sheets

Same Size as Printing Ink Drawdown Sheets.

Form No.	Thickness	Box Quantity	Boxes Per Case	Box Weight
P300-4NT	4 mil (100 µm)	250	4	3 lb
P300-7NT	7 mil (178 µm)	250	4	4 lb

See Page 19 for the complete range of available sizes and thicknesses.

Leneta Scrub Test Panels

Form P121-10N

Black Plastic-Vinyl Chloride/Acetate Copolymer

Smooth Matte Surface - Plasticizer Free

Thickness: 10 mils (0.25 mm) - Size: 6-1/2 x 17 in (165 x 432 mm)

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

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 D 2486, 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.





Form P121-10N

Fig. 1 Typical Failure Using Shim per D2486, Method A.

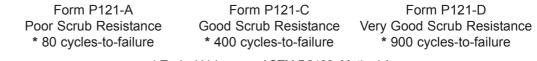
Fig. 2 Typical Failure Without Shim

The above photographs show actual tests of latex flat paints. Note that the films have worn down to a feather edge, with no sign of adhesion failure

ALSO AVAILABLE: WHITE SCRUB TEST PANELS - FORM P122-10N Used with dark colored paints for contrast. Same physical properties as Form P121-10N.

PACKAGING: 100 per box, 5 boxes per case.

Leneta Calibration Scrub Test Panels

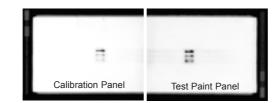


* Typical Values per ASTM D2486, Method A

These are standard panels prepared by applying white emulsion paints on black scrub test panels. The films are indefinitely stable and the panels of each type essentially identical. They are used as controls in the measurement of scrub resistance, to obtain *Calibration Ratings* that normalize the wide variations often encountered for undefined reasons, among laboratories using the same scrub method. The *Calibration Rating* is the performance of the test paint panel expressed as a percentage relative to that of the selected Calibration Panel. Thus:

% Calibration Rating = $\frac{\text{Test Panel Cycles-to Failure}}{\text{Calibration Panel Cycles-to-Failure}} \times 100 **$

** The letter indicating the calibration panel type is appended to the calibration rating, e.g. 125A, 65C, 95D etc.



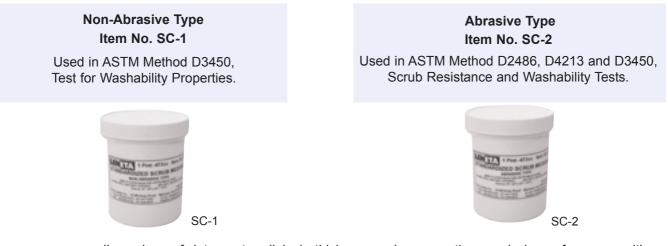
Illustrates simultaneous side-by-side scrubbing of half-panels to maximize correlation, analogous to ASTM D 2486, Method B.

NOTE: See also ASTM D 4213 "Weight Loss Method" whereby:

Calibration Rating = Calibration Panel Weight Loss x 100

PACKAGING: 3 per box, 4 boxes per case.

Leneta-ASTM Scrub Media



These are aqueous dispersions of detergent, cellulosic thickener and preservative, made in conformance with and approved for use in the indicated ASTM methods. The abrasive type contains ground silica for accelerated erosion. The two compounds are representative of the detergent and abrasive character of commercial cleaning products. Because of the variable nature of their ingredients, The Leneta Company provides media adjusted and tested to assure batch-to-batch uniformity. Each container is fully identified by batch number and shipping date. The contents of unopened containers are guaranteed standard in performance for a year, which is highly conservative on the basis of observed package stability.

Supplied in pint (473 mL) jars, sufficient for about 40 tests. Weight per jar: 2 lb, 8 jars per case

Leneta-ASTM Staining Media

Pigmented Type Item No. ST-1

Used in ASTM Method D 3450, Test for Washability Properties

This is a finely ground dispersion of high jet carbon black in a blend of mineral oil and odorless mineral spirits. It is specified in ASTM D3450 to meet the laboratory requirement for a reproducible composition of matter, representative in a general way of soilants encountered in the field.

Penetrating Dye Type Item No. ST-3

Recommended for ASTM Method D 3258, Test for Stain Resistance and Porosity

This is a proprietary composition of pigment and darkcolored dye dispersed in an organic liquid vehicle. When applied and then removed from a paint film, the intensity of the resultant stain indicates the degree of film porosity. ST-3 is more effective than other media recommended for this purpose.





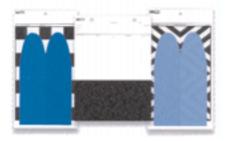
Both media have perfect package stability and are manufactured and control tested to assure batch-to-batch uniformity. Their usefulness extends not only to ASTM tests, but to any soil and stain removal test procedure.

Supplied in 4 fl.oz. (118 mL) cans or jars. Weight per jar: 1/2 lb, 4 jars per case

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Chemist's Point of View



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The Leneta Company

Our modern, climate controlled 26,000 square-foot plant in New Jersey.