EMS **GRIDS & TEM SUPPORT FILMS CATALOG**

EDITION III

SPECIMEN SUPPORT GRIDS, **SUPPORT FILM ON GRIDS, QUANTIFOIL® HOLEY CARBON FILMS,** C-FLAT™, TEM WINDOW GRIDS, **GRID HANDLING TOOLS,** GRAPHENE SUPPORT FILMS FOR TEM, **GRID INSERTS & HOLDERS,** CRYO SUPPLIES FOR GRIDS, **GRID STORAGE,** GRID STAINING SUPPLIES, **VACUUM SYSTEMS,** AND MORE...

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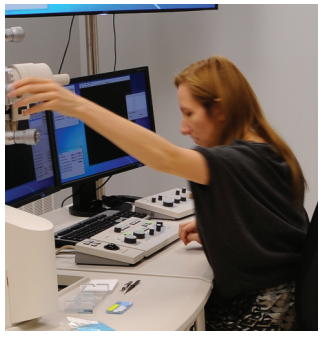

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EMS **GRIDS & TEM SUPPORT FILMS CATALOG**

EDITION III

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NEW Continuous Ultrathin Films

The continuous ultrathin film on holey film allows for the thinnest support film that still has adequate strength to withstand specimen preparation. This product is ideal for looking at nanotubes, virus particles and other small particulate material. See pages 35-36.

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NEW QUANTIFOIL® on London Finder Grids

Maxtaform grids with reference patterns are of the highest consistent quality, with a wide choice to choose from to suit all your particular needs.

All other geometries and thicknesses available upon request.
NOW AVAILABLE WITH ULTRATHIN CONTINUOUS CARBON. See page 47.

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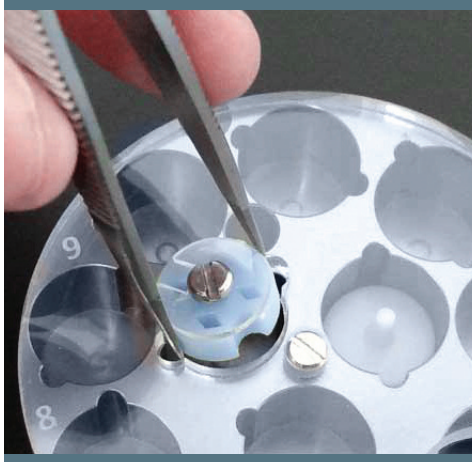

NEW EMS Cryo Pucks

Organized storage and transport for Cryo-EM specimen grids under cryogenic conditions

- 12 wells per puck
- Unique alpha-numeric code for easy identification
- Indexed wells for sample tracking
- Holds round Cryo Grid Boxes
- Puck depth accomodates pin type lid style Cryo Grid Boxes
- When using Cryo Grid Boxes with flat-style lids, you can store up to 24 Cryo Grid Boxes per puck
- Special tweezer slots allow easy and secure removal of Cryo Grid Boxes
- Shelved shipping Cane holds up to seven pucks
- Shelved Storage Cane

See page 63.

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SPECIMEN SUPPORT GRIDS

TECHNICAL TIP

Shiny Side or Rough Side?

Retention of sections on grids during poststaining and immunocytochemical procedures frequently is of crucial importance in the electron microscopy laboratory. Opinions differ regarding the side of grids most suitable for permanent adhesion.

The controversy is easily solved by examination of the surfaces involved. Grids are manufactured with a dull or rough side, and a shiny or smooth side. Epoxy sections exhibit a bumpy surface when viewed in the boat. Scanning electron microscopy images of epoxy sections without embedded material also reveal an uneven surface. Let us imagine a grid to be a single sided piece of sandpaper and the section to be a double sided piece of sandpaper. Sandpaper grips another piece of sandpaper much more readily than it does a smoothly polished metal surface. For the most secure adhesion of sections to grids, **SECTIONS SHOULD BE PICKED UP ON THE ROUGH SIDE OF THE GRID**.

Hildegard H. Crowley, Dept. of Biological Sciences, University of Denver, Denver, CO. 80208

NEW PRODUCT...

Tomography Grids

This 1.5mm square, 300 mesh grid is made from copper and is for use with Fischione tomography specimen holders. The size allows for further tilt in TEMs with small pole piece holes. An identification mark and the square shape give easy reference when rotated past 90°.

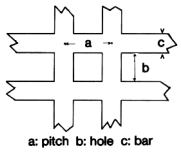
Cat No.	Description	Packed
74357	Copper Tomography Grid, 300 mesh	50/pk
Support Films on Tomography Grids		
74357-01	Lacey Carbon on Copper Tomography Grid	25/pk
74357-02	Lacey Carbon on Copper Tomography Grid	50/pk
74357-03	Carbon Film on Copper Tomography Grid	25/pk
74357-04	Carbon Film on Copper Tomography Grid	50/pk

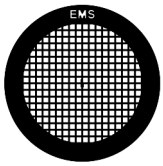
EMS Grids, Molybdenum Grids

EMS Grids — Square Mesh and Oval Hole

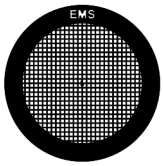
Diameter: 3.05mm, **Thickness:** see chart

Material: Copper (Cu), Nickel (Ni), Gold (Au), Molybdenum (Mo)

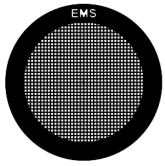




200 mesh



300 mesh



400 mesh

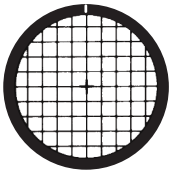
2x1 mm

TECHNICAL DATA

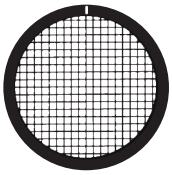
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)	Thickness
EMS SQUARE MESH						
200 mesh	**EMS200-Cu**	100/vial	125	95	35	Up to 27µm, +/-5µm
	EMS200-Ni	100/vial	125	95	35	Up to 27µm, +/-5µm
	EMS200-Au	50/vial	125	95	35	11µm, +/-2µm
	EMS200-Mo	25/vial	125	95	35	25µm, +/-4µm
300 mesh	**EMS300-Cu**	100/vial	83	58	25	Up to 19µm, +/-5µm
	EMS300-Ni	100/vial	83	58	25	Up to 19µm, +/-5µm
	EMS300-Au	50/vial	83	58	25	10µm, +/-2µm
	EMS300-Mo	25/vial	83	58	25	25µm, +/-4µm
400 mesh	**EMS400-Cu**	100/vial	62	37	25	Up to 19µm, +/-5µm
	EMS400-Ni	100/vial	62	37	25	Up to 19µm, +/-5µm
	EMS400-Au	50/vial	62	37	25	9µm, +/-2µm
	EMS400-Mo	25/vial	62	37	25	25µm, +/-4µm
EMS OVAL HOLE						
2x1 mm	**EMS2010-Cu**	100/vial	—	2000x1000	—	27µm, +/-5µm
	EMS2010-Ni	100/vial	—	2000x1000	—	27µm, +/-5µm
	EMS2010-Au	50/vial	—	2000x1000	—	27 micron
	EMS2010-Mo	25/vial	—	2000x1000	—	25µm, +/-4µm

NEW Molybdenum Gilder Grids

We have extended our range of TEM grid materials to include four types, which are now available in Molybdenum. The new products are manufactured using a process known as chemical 'milling' (etching) instead of the more familiar technique of 'electroforming' (deposition) that is used in the manufacture of copper, nickel and gold products. Molybdenum is used principally in applications where it's high temperature, hardness, expansion of coefficient and corrosion resistance characteristics are considered important. The material which is used has a purity of 99.9%.

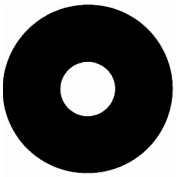


G200-Mo
200# Grid



G100-Mo
100# Grid

G2010-Mo
2x1Grid



G1000-Mo
1000 Micron Grid

Overall Diameter: 3.05mm
Rim Width: G200-Mo, G100-Mo: 0.225mm
Center Mark: G200-Mo, G100-Mo: Yes
Rim Mark: G200-Mo, G100-Mo: Yes

Molybdenum:
Symbol: Mo
Atomic number: 42
Melting point: 2617.0°C (2890.15°K, 4742.6°F)
Boiling point: 4612.0°C (4885.15°K, 8333.6°F)
Density: 10.22 g/cm^3

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)	Thickness
200 mesh	**G200-Mo**	25/vial	125	90	35	25µm
100 mesh	**G100-Mo**	25/vial	250	205	45	25µm
2 x 1	**G2010-Mo**	25/vial		2 x 1 mm		50µm
1000 micron	**G1000-Mo**	25/vial		1000 µm		50µm

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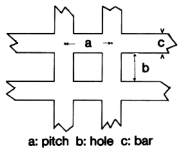
Gilder Grids

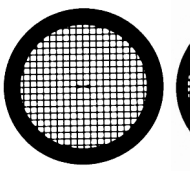
A reliable support specimen grid source. Features well-defined grid bars, maximum open area, and a matt/shiny side. Each grid is individually inspected. Newly introduced are copper grids with palladium plating. This plating offers better grid strength and avoids tarnishing.

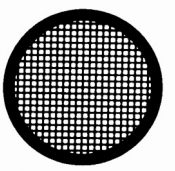


Gilder Standard Square Mesh

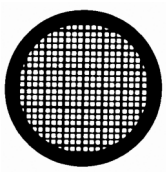
Diameter: 3.05mm, **Thickness:** 0.7 mil (18µm)
Material: Copper (Cu), Nickel (Ni), Gold (Au), Copper/Palladium (Cu/Pd=CP), Molybdenum (Mo)

[1] A thickened version of the standard, G200TH with an assymetric center. A mark on the rim allows for precise orientation of the grids.
[2] A combination of thin and thick bar grids, with a mark on the rim for orientation.
[3] The handle is designed for ease of handling and is easily removed if necessary. To remove the handle, just bend it over on a 90˚ angle.


G100 - G400


G200TH


G200T


G200TT

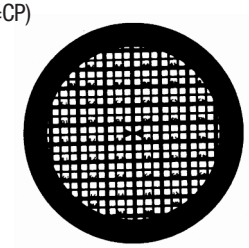
TECHNICAL DATA

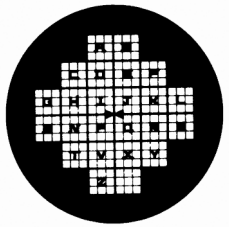
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
50 mesh	**G50-Cu**	100/vial	500	420	80
	G50-Ni	100/vial	500	420	80
	G50-Au	50/vial	500	420	80
75 mesh	**G75-Cu**	100/vial	340	285	55
	G75-Ni	100/vial	340	285	55
	G75-Au	50/vial	340	280	60
100 mesh	**G100-Cu**	100/vial	250	205	45
	G100-Ni	100/vial	250	205	45
	G100-CP	100/vial	250	205	45
	G100-Au	50/vial	250	200	50
	G100-Mo	25/vial	250	205	45
150 mesh	**G150-Cu**	100/vial	165	125	40
	G150-Ni	100/vial	165	125	40
	G150-CP	100/vial	165	125	40
	G150-Au	50/vial	165	125	40
175 mesh	**G175-Cu**	100/vial	145	108	37
	G175-Ni	100/vial	145	108	37
	G175-Au	50/vial	145	108	37
200 mesh	**G200-Cu**	100/vial	125	90	35
	G200-Ni	100/vial	125	90	35
	G200-CP	100/vial	125	90	35
	G200-Au	50/vial	125	90	35
	G200-Mo	25/vial	125	90	35
250 mesh	**G250-Cu**	100/vial	100	70	30
	G250-Ni	100/vial	100	70	30
	G250-Au	50/vial	100	70	30
[1]200 mesh *see description above*	**G200TH-Cu**	100/vial	125	85	40
	G200TH-Ni	100/vial	125	85	40
[2]200 mesh *see description above*	**G200TT-Cu**	100/vial	125	95	35-25
	G200TT-Ni	100/vial	125	95	35-25
[3]200 mesh *see description above*	**G200T-Cu**	100/vial	125	85	40
	G200T-Ni	100/vial	125	85	40
300 mesh	**G300-Cu**	100/vial	83	58	25
	G300-Ni	100/vial	83	58	25
	G300-CP	100/vial	83	58	25
	G300-Au	50/vial	83	58	25
400 mesh	**G400-Cu**	100/vial	62	37	25
	G400-Ni	100/vial	62	37	25
	G400-CP	100/vial	62	37	25
	G400-Au	50/vial	62	37	25

Gilder Finder Grids

Diameter: 3.05mm, **Thickness:** 0.7 mil (18µm) **Material:** Copper (Cu), Nickel (Ni), Gold (Au), Copper/Palladium (Cu/Pd=CP)

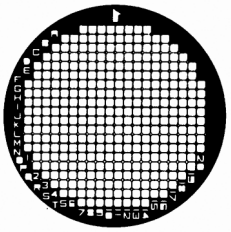
G200F1
[4] Thick bars dividing regions into 6 thin bar areas, which are identified by a numeric system.

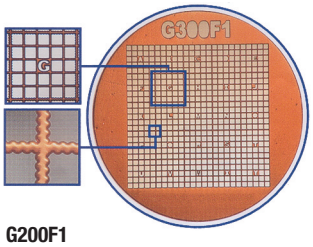




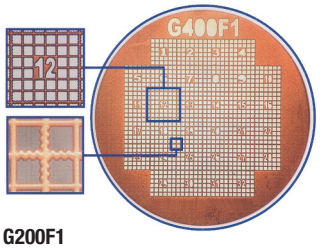
G200F2
[5] Thick bars dividing regions into 9 thin bar areas, which are identified by alphabetical letters located in the center of the grid.

G200HF3
[6] Each of the 322 grids squares, can be identified by reference to its unique combination of base 2 binary number and alphabet symbol (A-T). 0 is a short rounded solid pillar and 1 is a longer rounded solid pillar.





G200F1
[7] The block of 625 (25x25) individual cells is divided into smaller blocks bounded by thicker crenellated bars. Each small block of 25 cells has a central alphabet letter from A to Y for identification purposes.



G200F1
[8] The block of 1152 (32x36) individual cells is divided into smaller blocks bounded by thicker crenellated bars. Each small block of 36 (6x6) cells has a central number from 1 to 32 for identification purposes.

TECHNICAL DATA

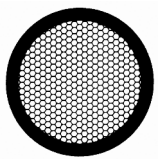
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
[4]200 mesh *see description above*	**G200F1-Cu**	100/vial	125	100	35-12
	G200F1-Ni	100/vial	125	100	35-12
	G200F1-CP	100/vial	125	100	35-12
	G200F1-Au	50/vial	125	100	35-12
[5]200 mesh *see description above*	**G200F2-Cu**	100/vial	125	106	25-12
	G200F2-Ni	100/vial	125	106	25-12
	G200F2-CP	100/vial	125	106	25-12
	G200F2-Au	50/vial	125	106	25-12
[6]200 mesh *see description above*	**G200HF3-Cu**	25/vial	125	-	-
	G200HF3-Ni	25/vial	125	-	-
[7]300 mesh *see description above*	**G300F1-Cu**	100/vial	83	63	20
	G300F1-Ni	100/vial	83	63	20
	G300F1-Au	50/vial	83	63	20
[8]400 mesh *see description above*	**G400F1-Cu**	100/vial	62	47	15
	G400F1-Ni	100/vial	62	47	15
	G400F1-Au	50/vial	62	47	15

SPECIMEN SUPPORT GRIDS

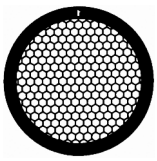
Gilder Grids (continued)

Gilder Standard Hexagonal Mesh

Diameter: 3.05mm,
Thickness: 0.7 mil (18µm)
Material: Copper (Cu), Nickel (Ni), Gold (Au)



G100H & G200H



G150H; G300H & G400H

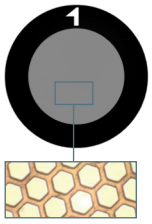
TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
50 mesh	G50H-Cu	100/vial	500	430	70
	G50H-Ni	100/vial	500	430	70
	G50H-Au	50/vial	500	430	70
75 mesh	G75H-Cu	100/vial	340	290	50
	G75H-Ni	100/vial	340	290	50
	G75H-Au	50/vial	340	290	50
100 mesh	G100H-Cu	100/vial	250	215	35
	G100H-Ni	100/vial	250	215	35
	G100H-Au	50/Vial	250	205	45
200 mesh	G200H-Cu	100/vial	125	100	25
	G200H-Ni	100/vial	125	100	25
	G200H-Au	50/vial	125	100	25
300 mesh	G300H-Cu	100/vial	83	58	25
	G300H-Ni	100/vial	83	58	25
	G300H-Au	50/vial	83	58	25
400 mesh	G400H-Cu	100/vial	62	37	25
	G400H-Ni	100/vial	62	37	25
	G400H-Au	50/vial	62	37	25

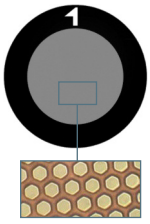
Gilder High Mesh Values NEW

There is increasing interest in the use of high mesh value TEM specimen support grids in life science, materials sciences, semiconductor and nanotechnology. We introduce three new products designed to improve support for thin specimens and membranes. These have a high hole/bar ratios giving good transmission values.

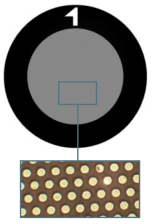
Diameter: 3.05mm, **Thickness:** 0.7 mil (18µm)
Mesh Diameter: 2mm, **Material:** Copper (Cu), Nickel (Ni), Gold (Au).



G1000HH Hexagonal



G1500HH Hexagonal



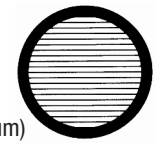
G2000HA Circular

TECHNICAL DATA

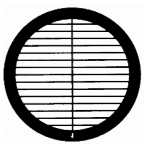
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
G1000HH Hexagonal Mesh	G1000HH-Cu	25/vial	25	~19	~6
	G1000HH-Ni	25/vial	25	~19	~6
	G1000HH-Au	25/vial	25	~19	~6
G1500HH Hexagonal Mesh	G1500HH-Cu	15/vial	16.5	~10.5	~6
	G1500HH-Ni	15/vial	16.5	~10.5	~6
	G1500HH-Au	15/vial	16.5	~10.5	~6
G2000HA Circular Mesh	G2000HA-Cu	10/vial	12.5	~6.5	~6
	G2000HA-Ni	10/vial	12.5	~6.5	~6
	G2000HA-Au	10/vial	12.5	~6.5	~6

Gilder Parallel Bars

Diameter: 3.05mm,
Thickness: 0.7 mil (18µm)
Material: Copper (Cu), Nickel (Ni), Gold (Au)



G100P & G200P



G100PB & G200PB

G300P & G400P

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
G50P	G50P-Cu	100/vial	500	416	84
	G50P-Ni	100/vial	500	416	84
	G50P-Au	50/vial	500	416	84
G50PB	G50PB-Cu	100/vial	500	416	84
	G50PB-Ni	100/vial	500	416	84
	G50PB-Au	50/vial	500	416	84
G75P	G75P-Cu	100/vial	340	270	70
	G75P-Ni	100/vial	340	270	70
	G75P-Au	50/vial	340	270	70
G75PB	G75PB-Cu	100/vial	340	270	70
	G75PB-Ni	100/vial	340	270	70
	G75PB-Au	50/vial	340	270	70
G100P	G100P-Cu	100/vial	250	185	65
	G100P-Ni	100/vial	250	185	65
	G100P-Au	50/vial	250	185	65
G100PB	G100PB-Cu	100/vial	250	185	65
	G100PB-Ni	100/vial	250	185	65
	G100PB-Au	50/vial	250	185	65
G150P	G150P-Cu	100/vial	165	115	50
	G150P-Ni	100/vial	165	115	50
	G150P-Au	50/vial	165	115	50
G150PB	G150PB-Cu	100/vial	165	115	50
	G150PB-Ni	100/vial	165	115	50
	G150PB-Au	50/vial	165	115	50
G200P	G200P-Cu	100/vial	125	80	45
	G200P-Ni	100/vial	125	80	45
	G200P-Au	50/vial	125	80	45
G200PB	G200PB-Cu	100/vial	125	80	45
	G200PB-Ni	100/vial	125	80	45
	G200PB-Au	100/vial	125	80	45
G300P	G300P-Cu	100/vial	83	48	35
	G300P-Ni	100/vial	83	48	35
	G300P-Au	50/vial	83	48	35
G300PB	G300PB-Cu	100/vial	83	48	35
	G300PB-Ni	100/vial	83	48	35
	G300PB-Au	50/vial	83	48	35
G400P	G400P-Cu	100/vial	62	22	40
	G400P-Ni	100/vial	62	22	40
	G400P-Au	50/vial	62	22	40
G400PB	G400PB-Cu	100/vial	62	22	40
	G400PB-Ni	100/vial	62	22	40
	G400PB-Au	50/vial	62	22	40

Gilder Rectangular

Diameter: 3.05mm,
Thickness: 0.7 mil (18µm)
Material: Copper (Cu), Nickel (Ni)

G75/300

G100/400

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
G75/300	G7530-Cu	100/vial	340/83	290/58	50/25
	G7530-Ni	100/vial	340/83	290/58	50/25
G100/400	G1040-Cu	100/vial	250/62	205/37	45/25
	G1040-Ni	100/vial	250/62	205/37	45/25

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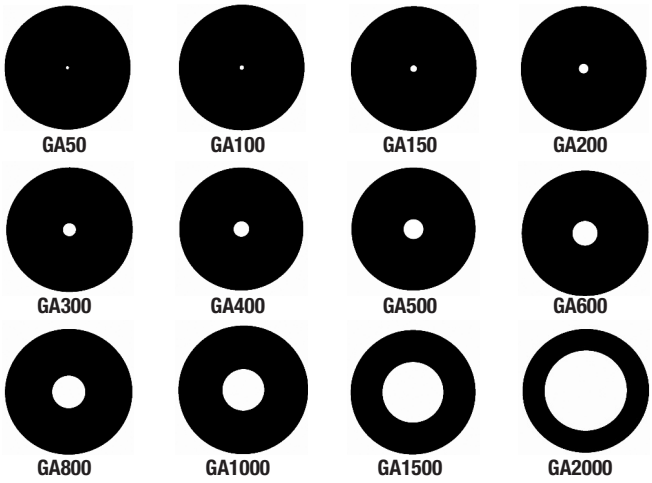
Gilder Grids (continued)

Gilder Single Slot (Aperture Grids)

Diameter: 3.05mm, **Thickness:** 50µm
Material: Copper (Cu), Nickel (Ni), Gold (Au)



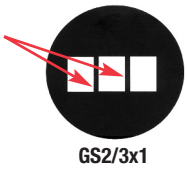
TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
GA50	GA50-Cu	100/vial	—	50	—
	GA50-Ni	100/vial	—	50	—
	GA50-Au	50/vial	—	50	—
GA75	GA75-Cu	100/vial	—	75	—
	GA75-Ni	100/vial	—	75	—
	GA75-Au	50/vial	—	75	—
GA100	GA100-Cu	100/vial	—	100	—
	GA100-Ni	100/vial	—	100	—
	GA100-Au	50/vial	—	100	—
GA150	GA150-Cu	100/vial	—	150	—
	GA150-Ni	100/vial	—	150	—
	GA150-Au	50/vial	—	150	—
GA200	GA200-Cu	100/vial	—	200	—
	GA200-Ni	100/vial	—	200	—
	GA200-Au	50/vial	—	200	—
GA300	GA300-Cu	100/vial	—	300	—
	GA300-Ni	100/vial	—	300	—
	GA300-Au	50/vial	—	300	—
GA400	GA400-Cu	100/vial	—	400	—
	GA400-Ni	100/vial	—	400	—
	GA400-Au	50/vial	—	400	—
GA500	GA500-Cu	100/vial	—	500	—
	GA500-Ni	100/vial	—	500	—
	GA500-Au	50/vial	—	500	—
GA600	GA600-Cu	100/vial	—	600	—
	GA600-Ni	100/vial	—	600	—
	GA600-Au	50/vial		600	
GA800	GA800-Cu	100/vial	—	800	—
	GA800-Ni	100/vial	—	800	—
	GA800-Au	50/vial	—	800	—
GA1000	GA1000-Cu	100/vial	—	1000	—
	GA1000-Ni	100/vial	—	1000	—
	GA1000-Au	50/vial	—	1000	—
	GA1000-Mo	25/vial	—	1000	—
GA1500	GA1500-Cu	100/vial	—	1500	—
	GA1500-Ni	100/vial	—	1500	—
	GA1500-Au	50/vial	—	1500	—
GA2000	GA2000-Cu	100/vial	—	2000	—
	GA2000-Ni	100/vial	—	2000	—
	GA2000-Au	50/vial	—	2000	—

Gilder Single Slot (Oval Holes)

Diameter: 3.05mm, **Thickness:** 50µm **Material:** Copper (Cu), Nickel (Ni), Gold (Au), Molybdenum (Mo)

The two central bars provide increased support enabling thinner films of the formvar/carbon type to be used.



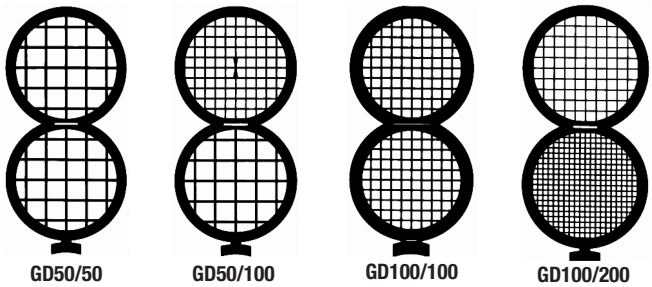
TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
GS2x0.5	G205-Cu	100/vial	—	2000x500	—
	G205-Ni	100/vial	—	2000x500	—
	G205-Au	50/vial	—	2000x500	—
GS2x1	G2010-Cu	100/vial	—	2000x1000	—
	G2010-Ni	100/vial	—	2000x1000	—
	G2010-Au	50/vial	—	2000x1000	—
	G2010-Mo	25/vial	—	2000x1000	—
GS2/3x1	G60610-Cu	100/vial	—	~606x1000	—
	G60610-Ni	100/vial	—	~606x1000	—
	G60610-Au	50/vial	—	~606x1000	—
	G60610-Mo	100/vial	—	~606x1000	—
GS1x0.2	G102-Cu	100/vial	—	1000x200	—
	G102-Ni	100/vial	—	1000x200	—
	G102-Au	50/vial	—	1000x200	—
GS1.5x0.3	G153-Cu	100/vial	—	1500x300	—
	G153-Ni	100/vial	—	1500x300	—
	G153-Au	50/vial	—	1500x300	—
GS2x0.75	G207-Cu	100/vial	—	2000x750	—
	G207-Ni	100/vial	—	2000x750	—
	G207-Au	50/vial	—	2000x750	—
GS2x1.5	G215-Cu	100/vial	—	2000x150	—
	G215-Ni	100/vial	—	2000x150	—
	G215-Au	50/vial	—	2000x150	—

Gilder Double Grids (Oyster)

These are used mostly in metallurgical applications for supporting thin metal foils. These grids have a curved securing tab which folds to the curvature of the 'sandwiched' grid. Four configurations are available.

Diameter: 3.05mm, **Thickness:** 0.7 mil (18µm) **Material:** Copper (Cu), Nickel (Ni), Gold (Au), Copper/Palladium (Cu/Pd=CP), Molybdenum (Mo)



TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
GD50/50	GD50-Cu	100/vial	500/500	430/430	70/70
	GD50-Ni	100/vial	500/500	430/430	70/70
GD50/100	GD5010-Cu	100/vial	500/250	430/195	70/55
	GD5010-Ni	100/vial	500/250	430/195	70/55
GD100/100	GD1010-Cu	100/vial	250/250	200/200	50/50
	GD1010-Ni	100/vial	250/250	200/200	50/50
GD100/200	GD1020-Cu	100/vial	250/125	200/85	50/40
	GD1020-Ni	100/vial	250/125	200/85	50/40

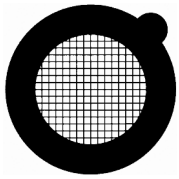
SPECIMEN SUPPORT GRIDS

Gilder Thin Bar Grids

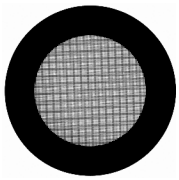
Thin Bar Grids have been developed using a new technology to produce ultra-fine grids with thinner cross bars than regular grids. The result is equally firm specimen support but with 40% more open area for viewing maximum specimen surface area.

Gilder Thin Bar Square Mesh

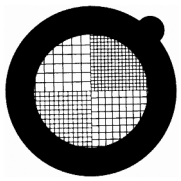
Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni), Gold (Au)



T200-T400



T1000



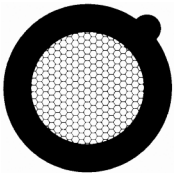
Variable Mesh

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
200 mesh	**T200-Cu**	100/vial	125	113	12
200 mesh	**T200-Ni**	100/vial	125	113	12
200 mesh	**T200-Au**	25/vial	125	113	12
300 mesh	**T300-Cu**	100/vial	83	73	10
300 mesh	**T300-Ni**	100/vial	83	73	10
300 mesh	**T300-Au**	25/vial	83	73	10
400 mesh	**T400-Cu**	100/vial	62	54	8
400 mesh	**T400-Ni**	100/vial	62	54	8
400 mesh	**T400-Au**	25/vial	62	54	8
1000 mesh	**T1000-Cu**	25/vial	25	19	6
1000 mesh	**T1000-Ni**	25/vial	25	19	6
Variable Mesh	**TVM-Cu** **TVM-Ni**	100/vial 100/vial	Combined:150, 200, 300, 400 mesh. Same as above		

Gilder Hexagonal Mesh

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



T200H-T600H

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
200 mesh	**T200H-Cu**	100/vial	125	113	12
200 mesh	**T200H-Ni**	100/vial	125	113	12
300 mesh	**T300H-Cu**	100/vial	83	73	10
300 mesh	**T300H-Ni**	100/vial	83	73	10
400 mesh	**T400H-Cu**	100/vial	62	54	8
400 mesh	**T400H-Ni**	100/vial	62	54	8
600 mesh	**T600H-Cu**	100/vial	37	29	8
600 mesh	**T600H-Ni**	100/vial	37	29	8

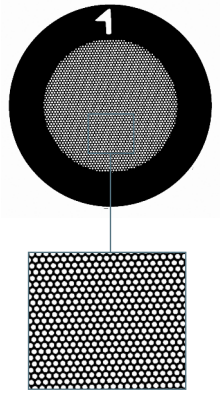
Revolutionary Specimen Support Grids NEW

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)

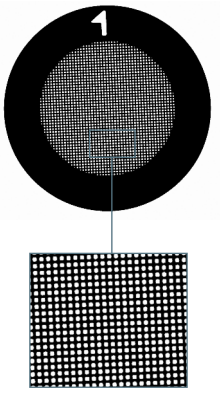
In addition to our square and hexagonal mesh Gilder Thin Bar Grids, we are now able to produce a very fine mesh that values up to 2,000 lines/inch. There is an increasing need in TEM for support thin films, routinely carbon, as thin as 1.5 - 2.0nm.

The pitch (the distance from the center of one bar to the center of the next bar) dimension in all grids remains constant, which allows them to be used as a lower magnification calibration aid.

Type T600HH (hexagonal) and T600HS (square) represent our efforts to reduce the grid bar width (only 5 microns) enabling more of the specimen to be viewed. All new types, apart from one side being shiny, the other matte, have a large asymmetrical mark in the rim which gives the identification of which side the specimen is on. Grids are 3.05mm overall diameter; 2.05mm mesh area diameter.



T601



T601H

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
600 mesh (square)	**T601-Cu**	100/vial	42	37	5
	T601-Ni	100/vial	42	37	5
600 mesh (hexagonal)	**T601H-Cu**	100/vial	42	37	5
	T601H-Ni	100/vial	42	37	5
1500 mesh (square)	**T1500-Cu**	15/vial	16.5	11.5	5
	T1500-Ni	15/vial	16.5	11.5	5
2000 mesh (square)	**T2000-Cu**	10/vial	12.5	7.5	5
	T2000-Ni	10/vial	12.5	7.5	5

TECHNICAL TIP

Removing a Charge from the Surface of Grids

Sometimes when you are trying to pick up sections, they won't adhere to the grid surface. If you don't have time to glow discharge clean the grid surfaces, try this little trick. Dip the grids in distilled water for a moment and wick off the excess with filter paper. Let them dry while you are arranging your sections. Your sections should now adhere to the grid surface. Some labs soak the grids they will use for the day in distilled water until they are needed. If this procedure fails, reclean your grids with acetone or chloroform or glow discharge clean the grid surfaces.

Jeanette Killius, NEOUCOM, Rootstown, OH.

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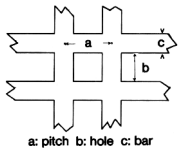
Veco Grids

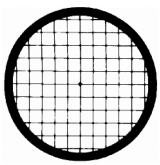
With a wide variety of styles available, Veco Grids offer superior handling characteristics. Plus, with a 0.8 mil thickness, Veco Grids are the most rigid grids available.

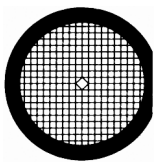


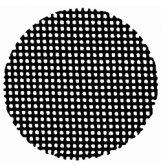
a: pitch b: hole c: bar

Square Mesh with Center Reference

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni), Gold (Au)


100 Mesh


E-200

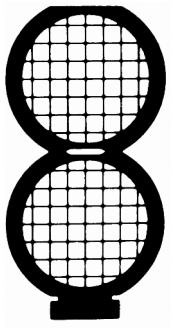

SS-200

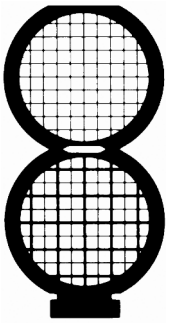
TECHNICAL DATA

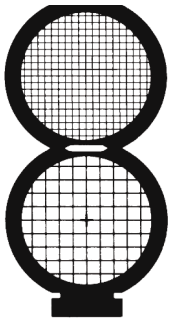
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
50 mesh	**0050-Cu**	100/vial	500	450	50
	0050-Ni	100/vial	500	450	50
	0050-Au	50/vial	500	450	50
75 mesh	**0075-Cu**	100/vial	333	283	50
	0075-Ni	100/vial	333	283	50
	0075-Au	50/vial	333	283	50
100 mesh	**0100-Cu**	100/vial	250	200	50
	0100-Ni	100/vial	250	200	50
	0100-Au	50/vial	250	200	50
150 mesh	**0150-Cu**	100/vial	167	117	50
	0150-Ni	100/vial	167	117	50
	0150-Au	50/vial	167	117	50
200 mesh	**0200-Cu**	100/vial	125	85	40
	0200-Ni	100/vial	125	85	40
	0200-Au	50/vial	125	85	40
250 mesh	**0250-Cu**	100/vial	100	60	40
	0250-Ni	100/vial	100	60	40
300 mesh	**0300-Cu**	100/vial	83	45	38
	0300-Ni	100/vial	83	45	38
	0300-Au	50/vial	83	45	38
400 mesh	**0400-Cu**	100/vial	63	30	33
	0400-Ni	100/vial	63	30	33
	0400-Au	50/vial	63	30	33
E200	**E200-Cu**	100/vial	125	85	40
E200	**E200-Ni**	100/vial	125	85	40
SS 200	**0200-SS**	100/vial	Punched from Stainless Steel Woven 200 mesh		

Square Mesh Oyster Grids

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)


D-75


D-100/100B

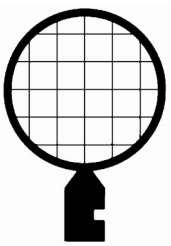

D-100K/200

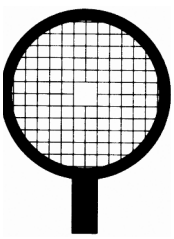
TECHNICAL DATA

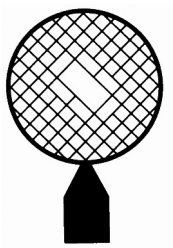
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
D75	**D75-Cu**	100/vial	333	283	50
	D75-Ni	100/vial	333	283	50
D100/100B	**D100B-Cu**	100/vial	250x 230/270	200x 190	50x 40/80
D100/100B	**D100B-Ni**	100/vial	250x 230/270	200x 190	50x 40/80
D100K/200	**D1002D-Cu**	100/vial	250x 125	200x 85	50x 40
D100K/200	**D1002D-Ni**	100/vial	250x 125	200x 85	50x 40

Square Mesh Handle Grids

Diameter: 3.05mm, **Thickness:** 0.8 mil **Material:** Copper (Cu), Nickel (Ni)


Square Mesh Handle Grid


111HDspec


100HDspec

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
100 mesh	**HD100-Cu**	100/vial	250	200	50
	HD100-Ni	100/vial	250	200	50
150 mesh	**HD150-Cu**	100/vial	167	117	50
	HD150-Ni	100/vial	167	117	50
200 mesh	**HD200-Cu**	100/vial	125	85	40
	HD200-Ni	100/vial	125	85	40
300 mesh	**HD300-Cu**	100/vial	83	45	38
	HD300-Ni	100/vial	83	45	38
400 mesh	**HD400-Cu**	100/vial	63	30	33
	HD400-Ni	100/vial	63	30	33
111HDspec	**HD111S-Cu**	100/vial	—	190	—
	HD111S-Ni	100/vial	—	190	—
100HDspec	**HD100S-Cu**	100/vial	—	200	—
	HD100S-Ni	100/vial	—	200	—

TECHNICAL TIP

On-Grid Enhancement

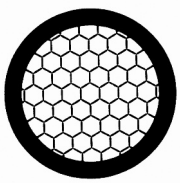
The use of nickel grids is recommended for on-grid enhancement, as nickel is relatively insensitive to silver enhancement. Gold or copper grids should not be used.

SPECIMEN SUPPORT GRIDS

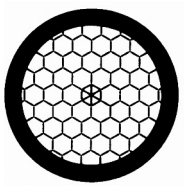
Veco Grids (continued)

Hexagonal Mesh

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni), Gold (Au)



Hexagonal Mesh



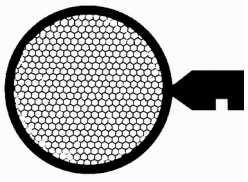
H111K Spec

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
H75 mesh	**H075-Cu**	100/vial	333	283	50
	H075-Ni	100/vial	333	283	50
H100 mesh	**H100-Cu**	100/vial	250	200	50
	H100-Ni	100/vial	250	200	50
H150 mesh	**H150-Cu**	100/vial	167	117	50
	H150-Ni	100/vial	167	117	50
H200 mesh	**H200-Cu**	100/vial	125	85	40
	H200-Ni	100/vial	125	85	40
	H200-Au	50/vial	125	85	40
H300 mesh	**H300-Cu**	100/vial	83	45	38
	H300-Ni	100/vial	83	45	38
	H300-Au	50/vial	83	45	38
H400 mesh	**H400-Cu**	100/vial	63	30	33
	H400-Ni	100/vial	63	30	33
H111KSpec	**H111K-Cu**	100/vial	-	185	-
	H111K-Ni	100/vial	-	185	-

Handle Grids Hexagonal Mesh

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni), Gold (Au)



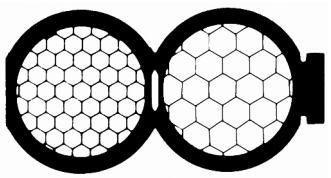
100-400 mesh

TECHNICAL DATA

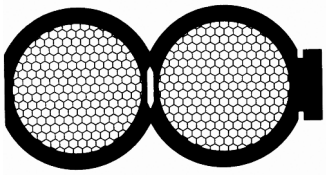
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
100 mesh	**HD100H-Cu**	100/vial	250	200	50
	HD100H-Ni	100/vial	250	200	50
150 mesh	**HD150H-Cu**	100/vial	167	117	50
	HD150H-Ni	100/vial	167	117	50
200 mesh	**HD200H-Cu**	100/vial	125	85	40
	HD200H-Ni	100/vial	125	85	40
300 mesh	**HD300H-Cu**	100/vial	83	45	38
	HD300H-Ni	100/vial	83	45	38
400 mesh	**HD400H-Cu**	100/vial	63	30	33
	HD400H-Ni	100/vial	63	30	33

Oyster Type Hexagonal Mesh

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni), Gold (Au)



DH75/300



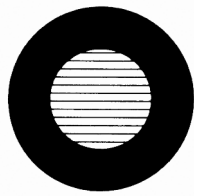
DH75-DH300

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
DH75/300	**D753H-Cu**	100/vial	333/83	293/45	50/38
	D753H-Ni	100/vial	333/83	293/45	50/38
DH75 mesh	**D75H-Cu**	100/vial	333	283	50
	D75H-Ni	100/vial	333	283	50
DH100 mesh	**D100H-Cu**	100/vial	250	200	50
	D100H-Ni	100/vial	250	200	50
DH200 mesh	**D200H-Cu**	100/vial	125	85	40
	D200H-Ni	100/vial	125	85	40
DH300 mesh	**D300H-Cu**	100/vial	83	45	38
	D300H-Ni	100/vial	83	45	38

Parallel Bar (R)

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



R100-R300

RB90

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
R100	**R100-Cu**	100/vial	250	200	50
	R100-Ni	100/vial	250	200	50
R150	**R150-Cu**	100/vial	167	117	50
	R150-Ni	100/vial	167	117	50
R200	**R200-Cu**	100/vial	125	85	40
	R200-Ni	100/vial	125	85	40
R300	**R300-Cu**	100/vial	85	45	38
	R300-Ni	100/vial	85	45	38
RB90	**RB90-Cu**	100/vial	276	92	184
	RB90-Ni	100/vial	276	92	184

TECHNICAL TIP

A Simple Method for Handling Grids

A simplified method for handling EM grids is described. This new method not only offers safety and identification of your samples but offers you improved handling, temporary storage, and identification of grids bearing ultrathin sections as well as a novel method for preparing bulk samples.

Gorycki, M.(1992). A Simple Method for Handling Grids. Biotechnic & Histochemistry 67/5, 313-314.

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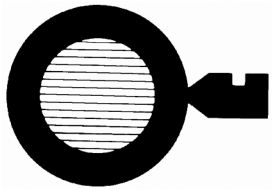
Veco Grids (continued)

Parallel Bar Handle Grids

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)



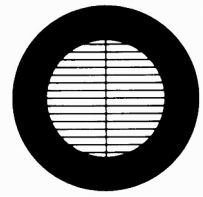
R100-R300

TECHNICAL DATA

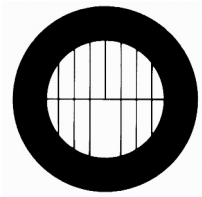
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
R100	**HDR100-Cu**	100/vial	250	200	50
	HDR100-Ni	100/vial	250	200	50
R200	**HDR200-Cu**	100/vial	125	85	40
	HDR200-Ni	100/vial	125	85	40
R300	**HDR300-Cu**	100/vial	85	45	38
	HDR300-Ni	100/vial	85	45	38

Parallel Bar with Divider

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)



R100D-R300D



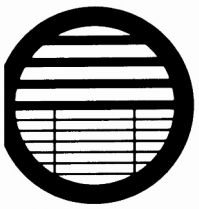
R100 Aspec

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
R100D	**R100D-Cu**	100/vial	250	200	50
	R100D-Ni	100/vial	250	200	50
R150D	**R150D-Cu**	100/vial	167	117	50
	R150D-Ni	100/vial	167	117	50
R200D	**R200D-Cu**	100/vial	125	85	40
	R200D-Ni	100/vial	125	85	40
R300D	**R300D-Cu**	100/vial	85	45	38
	R300D-Ni	100/vial	85	45	38
R100Aspec	**R100As-Cu**	100/vial	250	200	50
	R100As-Ni	100/vial	250	200	50

Sjostrand for Serial Sections

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



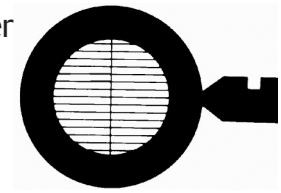
R100/200A

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
R100/200A	**R12CA-Cu**	100/vial	250/125	120/75	130/50
	R12CA-Ni	100/vial	250/125	120/75	130/50

Parallel Bar with Divider Handle Grids

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



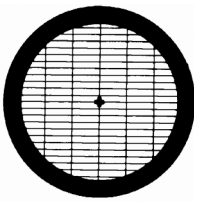
R100D-R300D

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
R100D	**HDR100D-Cu**	100/vial	250	200	50
	HDR100D-Ni	100/vial	250	200	50
R200D	**HDR200D-Cu**	100/vial	125	85	40
	HDR200D-Ni	100/vial	125	85	40
R300D	**HDR300D-Cu**	100/vial	85	45	38
	HDR300D-Ni	100/vial	85	45	38

Slotted Patterns

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



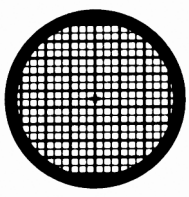
50/75-100/400

TECHNICAL DATA

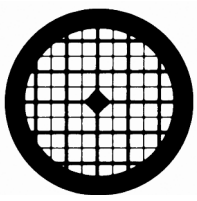
Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
50/75	**575-Cu**	100/vial	500/333	450/283	50
	575-Ni	100/vial	500/333	450/283	50
75/300	**753-Cu**	100/vial	300/83	293/43	40
	753-Ni	100/vial	300/83	293/43	40
100/400	**1040-Cu**	100/vial	250/63	212/25	38
	1040-Ni	100/vial	250/63	212/25	38

Thin and Thick Bars

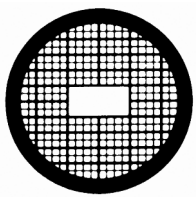
Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)



100µk



100+ym



GE 200

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
100µK	**100S-Cu**	100/vial	156/132	100	56/32
	100S-Ni	100/vial	156/132	100	56/32
100+ym	**100YM-Cu**	100/vial	—	100	—
	100YM-Ni	100/vial	—	100	—
GE200	**GE200-Cu**	100/vial	125/145	Slotted area 80 **Single slot: 1000x500**	45/65
	GE200-Ni	100/vial	125/145	Slotted area 80 **Single slot: 1000x500**	45/65

SPECIMEN SUPPORT GRIDS

Veco Grids (continued)

Single Hole

Diameter: 3.05mm, **Thickness:** 0.8 mil
Material: Copper (Cu), Nickel (Ni)

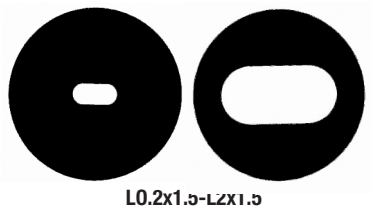
A600-A2000

TECHNICAL DATA

Type	Cat#	Packed	Hole Dia. (µm)
A600	**0600-Cu**	100/vial	600
	0600-Ni	100/vial	600
A800	**0800-Cu**	100/vial	800
	0800-Ni	100/vial	800
A1000	**1000-Cu**	100/vial	1000
	1000-Ni	100/vial	1000
A1500	**1500-Cu**	100/vial	1500
	1500-Ni	100/vial	1500
A2000	**2000-Cu**	100/vial	2000
	2000-Ni	100/vial	2000

Single Slot Oval

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)



L0.2x1.5-L2x1.5

TECHNICAL DATA

Type	Cat#	Packed	Hole Dia. (µm)
L0.2x1.5	**0215-Cu**	100/vial	200x1500
	0215-Ni	100/vial	200x1500
L2x1	**2010-Cu**	100/vial	2000x1000
	2010-Ni	100/vial	2000x1000
L2x1.5	**2015-Cu**	100/vial	2000x1500
	2015-Ni	100/vial	2000x1500

Oyster

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)

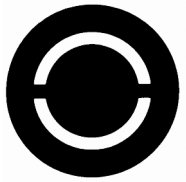
DL2X1

TECHNICAL DATA

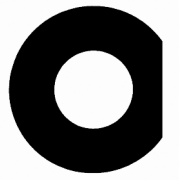
Type	Cat#	Packed	Hole Dia. (µm)
DL 2x1	**DL2010-Cu**	25/vial	2000x1000
	DL2010-Ni	25/vial	2000x1000

Special Shapes

Diameter: 3.05mm, **Thickness:** 0.8 mil, **Material:** Copper (Cu)



Z1600



EA1500

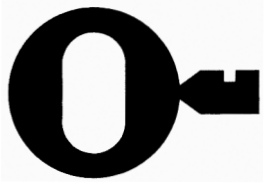
Z600

TECHNICAL DATA

Type	Cat#	Packed	Hole Dia. (µm)
Z1600	**Z1600-Cu**	100/vial	inner: 1600, outer: 1900 width:150
EA1500	**EA150-Cu**	100/vial	1500
Z600	**Z600-Cu**	100/vial	inner: 600, outer: 900 width: 150

Handle

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)



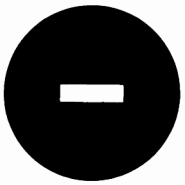
HDL2X1

TECHNICAL DATA

Type	Cat#	Packed	Hole Dia. (µm)
L2x0.6	**0620-Cu**	100/vial	2000x600
HDL2x1	**HD2010-Cu**	100/vial	2000x1000
	HD2010-Ni	100/vial	2000x1000

Rectangular

Diameter: 3.05mm,
Thickness: 0.8 mil
Material: Copper (Cu), Nickel (Ni)



L2.X0.6-L0.2X0.5

TECHNICAL DATA

Type	Cat#	Packed	Hole Dia. (µm)
L2x0.6	**0620-Cu**	100/vial	2000x600
	0620-Ni	100/vial	2000x600
L0.2x1	**1002-Cu**	100/vial	200x1000
	1002-Ni	100/vial	200x1000
L0.2x0.5	**0502-Cu**	100/vial	200x500
	0502-Ni	100/vial	200x500

TECHNICAL TIP

The Preparation of Adhesive Coated Grids for Picking Up Carbon Film to Make Carbon Coated Grids

The following steps should be followed in the preparation of adhesive coated grids:

1. Submerge about 2" of Scotch clear tape (3M) into 10ml of Dichloroethane (Ethylene Dichloride); shake and discard the tape.
2. The solution now becomes “grid-glue”
3. Place the grids (dull side up) on a piece of filter paper (dust-free room).
4. Take a pipette and place a drop of “grid-glue” on top of each grid.
5. Let the grids dry.
6. The grids are now ready to pick up the carbon foil and make the carbon coated grids.

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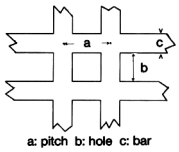
SPECIMEN SUPPORT GRIDS

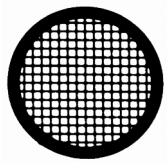
Maxtaform Grids

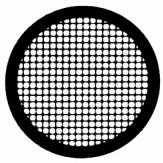
High Grade Maxtaform Grids with clean and smooth edges, firm support, and a large open area. Our copper grids are available with one surface coated with inert Rhodium. This coating will eliminate tarnishing, give side identification, and reduce the bar thickness.



Square Mesh and Oval Hole

Diameter: 3.05mm, **Thickness:** 0.75 mil
Material: Copper/Rhodium (Cu/Rh = CR), Nickel (Ni), Gold (Au)


100–400 mesh


100–400 mesh


2x1 mm

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
SQUARE MESH					
100 mesh	**M100-CR**	100/vial	254	213	41
	M100-Ni	100/vial	254	213	41
150 mesh	**M150-CR**	100/vial	165	131	34
	M150-Ni	100/vial	165	131	34
	M150-Au	100/vial	165	131	34
200 mesh	**M200-CR**	100/vial	127	103	24
	M200-Ni	100/vial	127	103	24
	M200-Au	100/vial	127	103	24
300 mesh	**M300-CR**	100/vial	84	61	23
	M300-Ni	100/vial	84	61	23
	M300-Au	100/vial	84	61	23
400 mesh	**M400-CR**	100/vial	63	43	20
	M400-Ni	100/vial	63	43	20
	M400-Au	100/vial	63	43	20
OVAL HOLE					
2x1 mm	**M2010-CR**	100/vial	—	2000x1000	—
	M2010-Ni	100/vial	—	2000x1000	—
	M2010-Au	25/vial	—	2000x1000	—

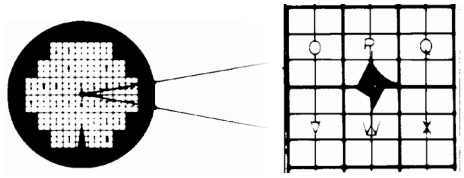
Maxtaform Finder Grids

Maxtaform grids with reference patterns are of the highest consistent quality, with a wide choice to choose from to suit all your particular needs.

London Finder

H 2, Pitch 127µ, 200 mesh

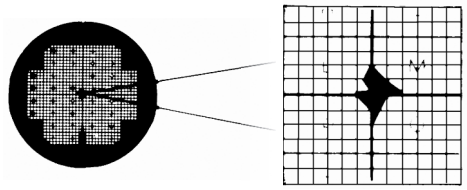
LF200-Cu	100/vial
LF200-Ni	100/vial
LF200-Au	100/vial



London Finder

H 7, Pitch 63µ, 400 mesh

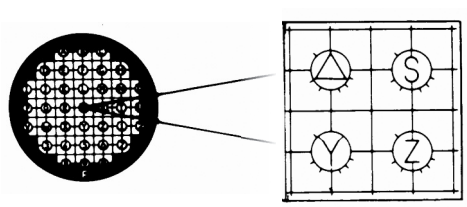
LF400-Cu	100/vial
LF400-Ni	100/vial
LF400-Au	100/vial



London Finder

H 15, Pitch 188µ, 135 mesh

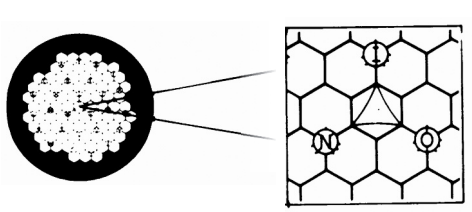
LF135-Cu	100/vial
LF135-Ni	100/vial



London Honeycomb

H 6, Pitch 235µ, Honeycomb

LH200-Cu	100/vial
LH200-Ni	100/vial

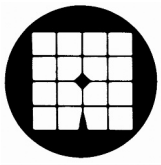


Maxtaform Specialist Grids

3 mm diameter. These grids fill all your special needs.

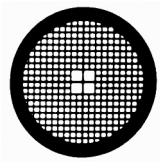
H 9, Pitch 508µ, 50 mesh

H9Spec-Cu	100/vial
H9Spec-Ni	100/vial



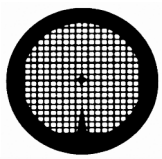
HF14, Pitch 127µ, 200 mesh

HF14Spec-Cu	100/vial
HF14Spec-Ni	100/vial



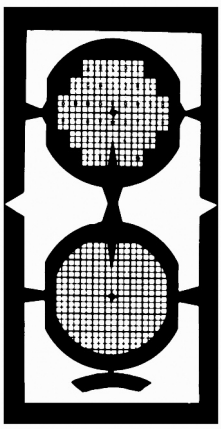
H 1, Pitch 127µ, 200 mesh

H1Spec-Cu	100/vial
H1Spec-Ni	100/vial



H 12 Folding, Pitch 126µ, 200 mesh

H12Spec-Cu	25/vial
H12Spec-Ni	25/vial



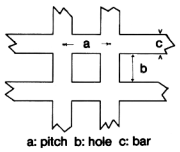
H 4, Pitch 63µ, 400 mesh

H4Spec-Cu	100/vial
H4Spec-Ni	100/vial

SPECIMEN SUPPORT GRIDS

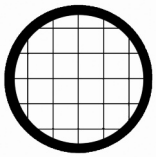
Athene Grids

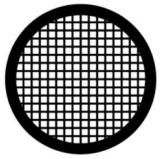
EMS is pleased to now offer the Athene range of grids, renowned for decades for the highest quality standards, exceptionally refined grid bars, and good handling characteristics.

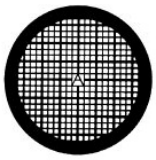


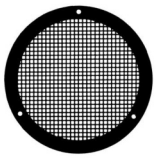
Square Mesh

Diameter: 3.05mm, **Material:** Copper (Cu), Nickel (Ni), Gold (Au)


50 mesh

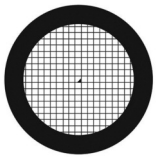

150 mesh

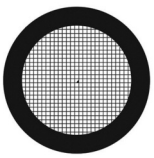

200 mesh, with center mark

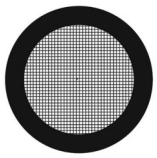

300 mesh

Thin Bar with Center Mark

Diameter: 3.05mm, **Material:** Copper (Cu) Nickel (Ni)

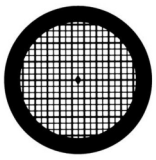

200 mesh


300 mesh


400 mesh

Thick and Thin Bar with Center Mark

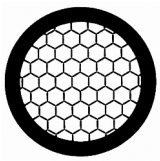
Diameter: 3.05mm, **Material:** Copper (Cu)


200 mesh


300 mesh

Hexagonal Mesh

Diameter: 3.05mm, **Material:** Copper (Cu), Nickel (Ni)


100 mesh

Slotted

Diameter: 3.05mm, **Material:** Copper (Cu)


Multiple Slots

TECHNICAL DATA

Type	Cat#	Packed	Pitch (µm)	Hole (µm)	Bar (µm)
SQUARE MESH					
50 mesh	**A50-Cu**	100/vial	—	450	—
150 mesh	**A150-Cu**	100/vial	—	150	—
200 mesh	**A200-Cu**	100/vial	—	100	27
	A200-Ni	100/vial	—	100	27
300 mesh	**A300-Cu**	100/vial	—	70	—
	A300-Ni	100/vial	—	70	—
400 mesh	**A400-Cu**	100/vial	—	45	—
SQUARE MESH WITH CENTER MARK					
200 mesh	**AC200-Cu**	100/vial	—	100	27
	AC200-Au	100/vial	—	100	27
THIN BAR WITH CENTER MARK					
200 mesh	**AT200-Cu**	100/vial	—	—	10
	AT200-Ni	100/vial	—	—	10
300 mesh	**AT300-Cu**	100/vial	—	—	10
	AT300-Ni	100/vial	—	—	10
400 mesh	**AT400-Cu**	100/vial	—	—	10
THICK AND THIN BAR WITH CENTER MARK					
200 mesh	**ATT200-Cu**	100/vial	—	150	—
300 mesh	**ATT300-Cu**	100/vial	—	75	—
HEXAGONAL MESH					
100 mesh	**AH100-Cu**	100/vial	—	240	—
	AH100-Ni	100/vial	—	240	—
400 mesh	**AH400-Cu**	100/vial	—	240	—
SLOTTED					
Multiple Slots	**AS-Cu**	100/vial		350–700	

Index Grids

Alpha Numeric Index Grid

By employing a rectangular mesh the support value of the grid has been increased, offering a value intermediate between the most commonly used grid (200 Lines/") and (300 Lines/"/). Each grid rectangle is asymmetrical having different outlines in all four corners. This allows for the orientation of the grid to be determined at microscopic levels. The index feature enables the position of each grid to be identified with reference to the letters A-O along the horizontal axis and the numbers 1-15 along the vertical axis. The logo in the rim allows for precise orientation and aids in the identification of each side. Grids are available in Copper, Copper/Palladium, Nickel, and Gold.

SPECIFICATIONS:

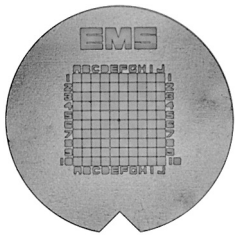
	Horizontal Axis:	Vertical Axis:
Mesh:	200 Lines/"	250 Lines/"
Pitch:	125 microns	105 microns
Bar Width:	20 microns	15 microns
Hole Width:	105 microns	90 microns
Overall Diameter:	3.05 mm	3.05 mm

CORNER OUTLINE WITH REFERENCE TO LOGO IN THE RIM:

Top Right	Right Angle
Top Left	Inverted Quadrant
Bottom Right	Diagonal Line
Bottom Left	Quadrant

Cat. No.	Description	Pack
G200F4-Cu	Alpha/Numeric Index Grid, Copper	100/vial
G200F4-CP 100/vial	Alpha/Numeric Index Grid, Copper/Palladium	
G200F4-Ni	Alpha/Numeric Index Grid, Nickel	100/vial
G200F4-Au	Alpha/Numeric Index Grid, Gold	50/vial

Asbestos Analysis Index Grids



Our unique index grids for all of your microscopy work. These grids are manufactured in the strictest accordance to meet AHERA requirements.

SPECIFICATIONS:

Overall Diameter	3.05mm
Mesh	200 lines/"
Pitch	125 microns
Bar Width	10 microns +/- 2 microns
Hole Width	115 microns +/- 2 microns
Index Identification	Horizontal: A-J, Vertical: 1-10
EMS Logo in Rim	
Asymmetrical Cut Out In Rim	Allows for precise repeat location and aids in side differentiation

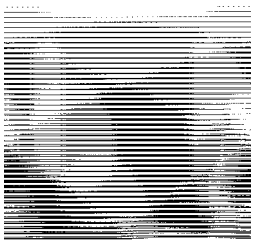
Cat. No.	Description	Pack
G200EMSIND-Cu	Asbestos Analysis Index Grids, Copper	100/vial
G200EMSIND-Ni	Asbestos Analysis Index Grids, Nickel	100/vial

Electron Microscopy Sciences In PA: (215) 412-8400 • Toll-Free (800) 523-5874
Fax (215) 412-8450 or 8452 • email: info@emsdiasum.com or stacie@ems-secure.com • www.emsdiasum.com

SEM Finder Grids

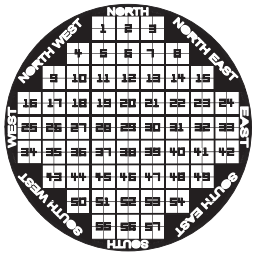
These new SEM grids are designed to aid in the identification and localization of SEM specimens when placed on standard SEM stubs.
The SEMF2 allows for easy characterization and analysis of particles and suspensions.
The SEMF3 uses an alpha-numeric index, allowing up to 25 predetermined specimens to be fixed and then located in a SEM.

Type SEMF1
Referring to the annular rim identifies north, south, east and west. The four quadrant markers are tapered towards the centre. 100 Radial sectors are identified by reference to decimal numbers in the annular rim and alphabet letters in the four quadrants.



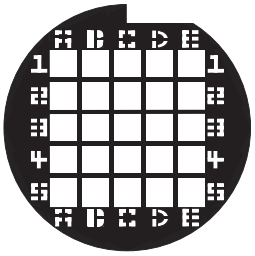
Overall Diameter	10 mm
Overall Thickness	~50 µm
Material	Copper, Nickel or Gold

Type SEMF2
The larger cells are identified using numbers from 1 – 57. Each large cell is sub-divided into 4, making a total of 228 identifiable cells by reference to their number and geographical location.



Overall Diameter	10 mm
Overall Thickness	~50 µm
Material	Copper, Nickel or Gold

Type SEMF3
25 cells are identified by reference to their alpha-numeric position. The large asymmetric cut-out feature in the rim enables the right view to be easily obtained when placing on a SEM stub.



Overall Diameter	10 mm
Overall Thickness	~50 µm
Material	Copper, Nickel or Gold

Cat. No.	Description	Pack
80101-Cu	SEMF1, Copper	10/vial
80101-Ni	SEMF1, Nickel	10/vial
80101-Au	SEMF1, Gold	5/vial
80102-Cu	SEMF2, Copper	10/vial
80102-Ni	SEMF2, Nickel	10/vial
80102-Au	SEMF2, Gold	5/vial
80103-Cu	SEMF3, Copper	10/vial
80103-Ni	SEMF3, Nickel	10/vial
80103-Au	SEMF3, Gold	5/vial

Synaptek™ Grids

Very reliable under the electron beam- Synaptek® unflexible grids, made of a special alloy (Berylium-Copper). Offers extreme stability for coating with support film. 4 mil thick (100µm), 3.05mm diameter, this standard 2x1mm oval slot grids are contamination free and reusable after cleaning.
0.5x2mm oval slots are also available.
NUM grids: Numbered grids are in random order. Numbers may be duplicated.
DOT grids: 2 dots are marked on one side of the grid for identification. Dots are visible to the naked eye.
NOTCH grids: A mark, stamped on one side of the grid to facilitate the handling of the grids. Notch is available with NUM or DOT grids.
GILDED grids: completely Gold-Plated grids, suitable for immunology research, autoradiography, as well as special needs.

DOT
2x1mm slot

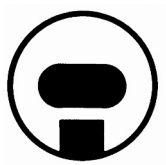
NOTCH-DOT
2x1mm slot

DOT
2x0.5mm slot

NOTCH-NUM
2x1mm slot

NUM
2x1mm slot

GILDED NOTCH-NUM
2x1mm slot



NOTCH
2x1mm slot

NOTCH DOT
0.8x1.8mm slot

DOT
1.5mm hole

Cat. No.	Description	Pack
S2010-DOT	DOT, 2 x 1mm slot	100/vial
S2010-NUM	NUM, 2 x 1mm slot	100/vial
S2010-NOTCH	NOTCH, 2 x 1mm slot	100/vial
S2010-ND	NOTCH-DOT, 2 x 1mm slot	100/vial
S2010-NN	NOTCH-NUM, 2 x 1mm slot	100/vial
SG2010-NN	GILDED NOTCH-NUM, 2 x 1mm slot, Gold Plated	100/vial
S2005-DOT	DOT, 0.5 x 2mm slot	100/vial
S1808-ND	NOTCH-DOT, 0.8 x 1.8mm slot	100/vial
S1020-NI	Ni-NOTCH-DOT, 1 x 2mm slot, Nickel	100/vial
S1500-DOT	DOT, 1.5mm hole	100/vial
S1500NI-DOT	Ni-DOT, 1.5mm hole, Nickel	100/vial
S1500MO-DOT	Mo-DOT, 1.5mm hole, Molybdenum, Thickness of 75µm (3 mil)	25/vial

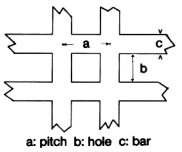
Beryllium Grids for Transmission Electron Microscopy

Beryllium grids are superior to all other materials for in situ analysis in transmission electron microscopes because for practical purposes they give off no detectible background radiation which could interfere with the analysis. **Purity:** 99.97%, **Size:** 3.05mm

Cat. No.	Description	Pack
0200-Be	Beryllium Grids 200 Mesh	each

SPECIMEN SUPPORT GRIDS

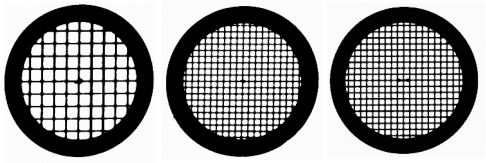
EMBRA Grids



Diameter: 3.05mm, **Thickness:** 16µm for meshed and 5-20 µm for oval hole grids*
Material: Copper (Cu), Nickel (Ni), Gold (Au), Stainless Steel (SS), Titanium (Ti), Molybdenum (Mo), Aluminum (Al)

EMBRA electroformed grids combine a high open area with a rigid construction which allows for relatively easy handling. We offer these grids in a series of hard to find materials, which are not available from other manufacturers. They are as follows: Stainless Steel (SS), Titanium (Ti), Molybdenum (Mo), and Aluminum (Al)

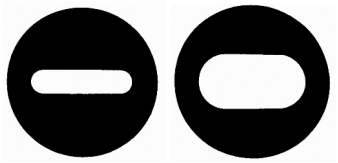
Square Mesh



100 mesh | 200 mesh | 300 mesh

Type	Cat#	Pack	Open Area
100 mesh	E100-SS	25/vial	65%
	E100-Ti	25/vial	65%
	E100-Mo	25/vial	65%
	E100-Al	25/vial	65%
200 mesh	E200-SS	25/vial	50%
	E200-Ti	25/vial	50%
	E200-Mo	25/vial	50%
	E200-Al	25/vial	50%
300 mesh	E300-Ti	25/vial	40%
	E300-Mo	25/vial	40%
	E300-Al	25/vial	40%

Oval Slot

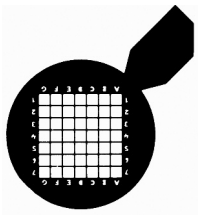


0.4-2mm | 2x1mm

Type	Cat#	Pack	Open Area
0.4x2mm	E0420-SS	25/vial	—
	E0420-Ti	25/vial	—
	E0420-Mo	25/vial	—
	E0420-Al	25/vial	—
2x1mm	E2010-SS	25/vial	—
	E2010-Ti	25/vial	—
	E2010-Mo	25/vial	—
	E2010-Al	25/vial	—

Coordinator

Standard 3.05mm grids, with a handle.
They are available in copper and nickel.

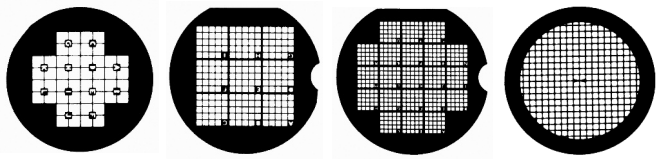


100 mesh

Type	Cat#	Pack	Open Area
100 mesh	EC100-Cu	100/vial	—
	EC100-Ni	100/vial	—
200 mesh	EC200-Cu	100/vial	—
	EC200-Ni	100/vial	—
300 mesh	EC300-Cu	100/vial	—
	EC300-Ni	100/vial	—

Finder

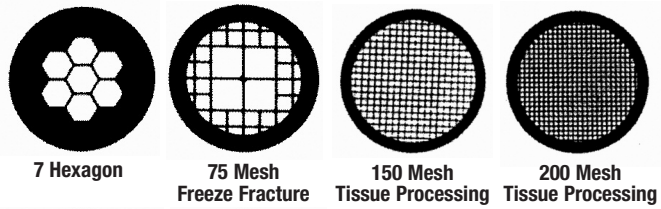
Standard 3.05mm diameter grids which have one straight and one round cut out from the rim which assists in the orientation of the grid. They are available in Copper, Nickel, and Gold Grids.



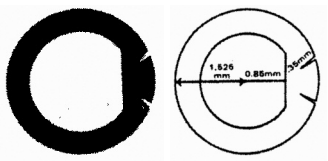
100 mesh | 200 mesh | 300 mesh | 400 mesh

Type	Cat#	Pack	Open Area
100 mesh	EF100-Cu	100/vial	—
	EF100-Ni	100/vial	—
200 mesh	EF200-Cu	100/vial	—
	EF200-Ni	100/vial	—
	EF200-Au	25/vial	—
300 mesh	EF300-Cu	100/vial	—
	EF300-Ni	100/vial	—
	EF300-Au	25/vial	—
400 mesh	EF400-Cu	100/vial	—
	EF400-Ni	100/vial	—
	EF400-Au	25/vial	—

Selective Grids



7 Hexagon | 75 Mesh Freeze Fracture | 150 Mesh Tissue Processing | 200 Mesh Tissue Processing



CHIEN Grids | CHIEN Grids

Type	Cat#	Pack	Open Area
7 Hexagon			
7-Hex	E7HEX-Cu	100/vial	—
7-Hex	E7HEX-Ni	100/vial	—
Freeze Fracture			
75FF	E75FF-Cu	100/vial	—
75FF	E75FF-Ni	100/vial	—
Tissue Processing			
6G150	ETP150-Cu	100/vial	—
6G150	ETP150-Ni	100/vial	—
6G200	ETP200-Cu	100/vial	—
6G200	ETP200-Ni	100/vial	—
Chien Grids			
9G20H	EC20H-Cu	100/vial	—
9G20H	EC20H-Ni	100/vial	—

* Reference: Chien R, Van de Velde R, Heusser R: Simultaneous Ultramicrotomy of multiple areas and examination of ribbons on one new grid. Proc. 43rd Annual Meeting, Elec. Micro. Soc. Amer., G W Bailey, ed, San Franciso Press, 460 (1985). Galey FR, Nilson SEG: A new method for transferring sections from the liquid surface of the trough through staining solutions to the supporting film of a grid. J. Ultrastruct. Res., 14, (1966), 405-410.

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Omniprobe TEM Grids and Accessories

This section is dedicated to the accessories and consumables from the Omniprobe family of Nanomanipulation Systems, including:
AutoProbe™ 200, AutoProbe™ 250, AutoProbe™ 300, Short-Cut™, OmniGIS™ and SST™ 400-1.

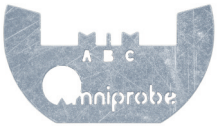
Omniprobe TEM Grid Comparison Chart

Cat. No.	No. of Posts	Material	Thickness (Nominal) Microns	Nominal Post Downset Microns	Unique Feature
75964-01	3	Copper	30	10	—
75964-02	3	Molybdenum	30	10	Top Downset Only
75964-03	0	Beryllium	25	N/A	Half Ring
75964-04	5	Copper	40	10	5th Post is E
75964-05	4	Copper	30	10	—
75964-06	4	Molybdenum	30	10	Top DS Only
75964-07	3	Copper	30	5	Side Access
75964-08	3	Copper	30	5	—
75964-09	5	Copper	35	5	5th Post is "E"
75964-10	4	Copper	30	5	—

Copper or Molybdenum Lift-Out Grids

Custom copper or molybdenum lift-out grids specifically designed for in-situ lift-out. These grids include multiple indexed mounting locations with both vertical bars and "V" shaped attachment surfaces. 3mm diameter.

75964-01



75964-02

Cat. No.	Description	Pack
75964-01	Copper Lift-Out Grids	100/vial
75964-02	Molybdenum Lift-Out Grids	25/vial

Beryllium Haft-Ring Grids

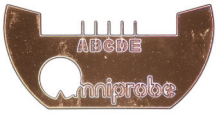
Custom beryllium haft ring grids. 3mm diameter.

75964-03

Cat. No.	Description	Pack
75964-03	Beryllium Haft Ring Grids	10/pk

Copper 5-Post Lift-Out Grids

Custom copper 5-post lift-out grids specially designed for in-situ lift-out. These grids include multiple indexed mounting locations, all with vertical bars attachment surfaces. Now with lower profile sides for easier access to utermost posts. 3mm diameter.



75964-04

Cat. No.	Description	Pack
75964-04	Copper 5-Post Lift-Out Grids	100/vial

Copper or Molybdenum 4-Post Lift-Out Grids

Custom copper or molybdenum 4-post lift-out grids specially designed for in-situ lift-out. These grids include multiple indexed mounting locations, two with vertical bars attachment surfaces and two with "V" shaped alignment surfaces. Sides have lower profile for easier access to outermost posts. 3mm diameter.

75964-05

75964-06

Cat. No.	Description	Pack
75964-05	Copper 4-Post Lift-Out Grids	100/vial
75964-06	Mo 4-Post Lift-Out Grids	25/vial

Copper 3-Post Lift-Out Grids, Side Access

3 post copper lift-out grids, similar to 75964-01, in design but 35 micron thick with 1 edge lower for easy access. Packaged in glass vials

75964-07

Cat. No.	Description	Pack
75964-07	Copper 3-Post Lift-Out Grids, Side Access	100/vial

Copper 3-Post Lift-Out Grids, Shallow Downset

3 post copper lift-out grids specifically designed for in-situ lift-out. These grids include multiple indexed mounting locations with both vertical bar and "V" shaped attachment surfaces. These grids have a shallower downset and slightly wider center post than 75964-01. Packaged in glass vials.

75964-08

Cat. No.	Description	Pack
75964-08	Copper 3-Post Lift-Out Grids, Shallow Downset	100/box

Copper 5-Post Lift-Out Grids

5 post copper lift-out grids specifically designed for in-situ lift-out. These grids include multiple indexed mounting locations, all with vertical bar attachment surfaces. Now with lower profile sides for easier access to outermost posts. 3mm dia. Packaged in glass vials.

75964-09

Cat. No.	Description	Pack
75964-09	Copper 5-Post Lift-Out Grids	100/box

Copper 4-Post Lift-Out Grids

4 post copper lift-out grids specifically designed for in-situ lift-out. These grids include multiple indexed mounting locations, two with vertical bar attachment surfaces and two with "V" shaped alighment surfaces. Sides have lower profile for easier access to outermost posts. 3mm dia. Packaged in plastic vials.

75964-10

Cat. No.	Description	Pack
75964-10	Copper 4-Post Lift-Out Grids	100/box

Omni Grid Storage Box

Storage box for 100 standard or haft grids—3 mm diameter – TEM grids. Box comes complete with base, lid and clips.

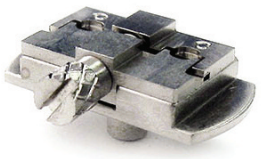
Cat. No.	Description	Pack
75965-01	Grid Storage Box	each

LIFT OUT GRIDS

Omniprobe TEM Grids and Accessories

Grid & Sample Holders

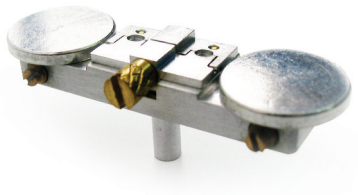
TEM Grid Dual Holders



Post Base TEM Grid Holder. Available in two versions: stainless steel (SS—very slightly magnetic), can affect imaging in UHS mode; and aluminum (Al-non-magnetic). Short post – standard is ⅛" (3.2mm) diameter x 0.15" (4mm) length.

75968-SS	EM, Grid Dual Holder, SS	each
75968-Al	TEM, Grid Dual Holder, Al	each

TEM Grid & Sample Holders



TEM grid holder with stations for 2 TEM grids and 2 sample stubs. Available in two versions: stainless steel (SS – very slightly magnetic), and aluminum (Al-non-magnetic). Long post – standard is ⅛" (3.2mm) diameter x 0.32" (8.1mm) length. Comes with 2 sample stubs.

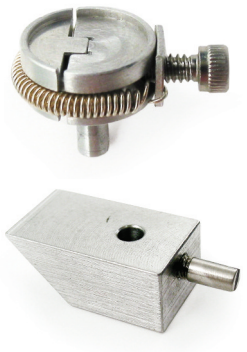
75969-SS	TEM Grid & Sample Holder, SS	each
75969-Al	TEM Grid & Sample Holder, Al	each

Single Stub & Two TEM Grid Holders

This station is meant for 2 TEM grids and 1 sample Pin Stub. Available in two versions: Stainless Steel (SS – very slightly magnetic), and Aluminum (Al – non-magnetic). Long post – standard is ⅛" (3.2mm) diameter x 0.32" (8.1mm) length. Comes with an aluminum sample stub.

75971-SS	TEM Grid & Sample Holder, SS	each
75971-Al	TEM Grid & Sample Holder, Al	each

Single TEM Grid Holders & Holder Base



Single TEM Grid Holder is made from aluminum with steel spring, holds one 3 mm TEM grid by the spring loaded vise, and has a raised edge which protects the sample from accidental damage. The holder has a ⅛" (3.2 mm) diameter x 0.32" pin (8.1 mm) length pin. It fits most standard pin stub holders.The Sample Holder Base securely holds the Single TEM Grid Holder above, under a stereomicroscope and permits viewing from two angles without changing focus.

75970-01	Single TEM Grid Holder	each
75970-50	Single TEM Grid Holder Base	each

Short-Cut™ Coupons

Frontside Thinning, 45˚

Frontside Thinning, 45˚, TEM sample grid coupon designed specially for use in the Short-Cut™ tool. The center portion is a standard 3 mm grid into which the sample loaded needle is swaged and cut 45˚. Available in two versions: One is made from pure copper and the other is molybdenum coated copper.

75974-Cu	Frontside Thinning Copper, 45˚	20/pk
75974-Mo	Frontside Thinning Mo/Cu, 45˚	20/pk

Backside Thinning, 45˚

Backside Thinning, 45˚, TEM sample grid coupon designed specially for use in the Short-Cut™ tool. The center portion is a standard 3 mm grid into which the sample loaded needle is swaged and cut 45˚. Available in two versions: One made from pure copper and the Other is molybdenum coated copper.

75975-Cu	Backside Thinning Copper, 45˚	20/pk
75975-Mo	Backside Thinning Mo/Cu, 45˚	20/pk

Frontside Thinning, 26.5˚

Frontside Thinning, 26.5˚, TEM sample grid coupon designed specially for use in the Short-Cut™ tool. The center portion is a standard 3 mm grid into which the sample loaded needle is swaged and cut 26.5˚. Available in two versions: One made from pure copper and the other is molybdenum coated copper.

75976-Cu	Frontside Thinning Copper, 26.5˚	20/pk
75976-Mo	Frontside Thinning Mo/Cu, 26.5˚	20/pk

Backside Thinning, 26.5˚

Backside Thinning, 26.5˚, TEM sample grid coupon designed specially for use in the Short-Cut™ tool. The center portion is a standard 3 mm grid into which the sample loaded needle is swaged and cut 26.5˚. Available in two versions: One made from pure copper and the other is molybdenum coated copper.

75977-Cu	Backside Thinning Copper, 26.5˚	20/pk
75977-Mo	Backside Thinning Mo/Cu, 26.5˚	20/pk

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Omniprobe TEM Grids and Accessories

Probe Tips

Tungsten/Nickel Probe Tips

Custom tip designed with a nickel tube shank and tungsten tip. Tip radius is 0.5µm with 13˚ taper angle for maximum lifetime service.

75960-01	Tungsten/Nickel Probe Tip	10/bx

Tungsten Probe Tips

Custom tip designed from tungsten. Tip radius is 0.5µm with 13˚ taper angle for maximum lifetime service.

75960-02	All Tungsten Probe Tip	10/bx

In-Situ Probe Tips

Custom tungsten tip with a stainless steel shank, for use with AutoProbe™ 300, in-situ probe tip exchange systems and Short-Cut™. Tip radius is 0.5µm with 8 –10˚ taper angle.

[This tip is also Short-Cut™ compatible]

75960-03	in-Situ Probe Tip	20/bx

Xtreme Access ½" Tungsten Probe Tips

Custom tip designed from tungsten. Tip radius is < 0.5µm with 13˚ taper angle for maximum lifetime service.

75960-04	XA ½" Tungsten Probe Tip	10/bx

Autoprobe 250 Tungsten Probe Tips

Custom tip designed from tungsten. Tip radius is < 0.5µm with 6˚ taper angle for maximum lifetime service. [Compatible with Short-Cut™ system for direct conversion to TEM grid]

75960-05	AP250 Tungsten Probe Tip	10/bx

Xtreme Access Short-Cut™ Probe Tips

Custom tip designed from tungsten. Tip radius is < 0.5µm with 6˚ taper angle for maximum lifetime service. [Compatible with Short-Cut™ system for direct conversion to TEM grid]

75960-06	XA Short Cut Tungsten Probe Tip	10/bx

Xtreme Access Compatible

XA Probe Point Holder

Xtreme Access Probe Tip Holder for use with ½" tungsten probe tip, #75960-04 and #75960-06. Comes with a storage vessel.

75961-10	XA Probe Point Holder	each

AP250 Probe Tip Holder

AutoProbe™ 250 probe tip holder uses the tungsten probe tip 75960-05. Compatible with the Short-Cut™ for direct conversion to TEM Grid. Comes with a storage vial and handl

75961-05	AP250 Probe Tip Holder	each

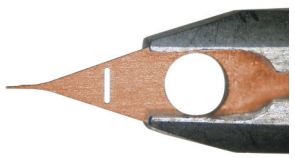
XA Short-Cut™ Probe Tips

Custom tip designed from tungsten. Tip radius is < 0.5µm with 6˚ taper angle for maximum lifetime service. [Compatible with Short-Cut™ system for direct conversion to a TEM grid]

75960-06	AP250 Tungsten Probe Tip	10/bx

End Effector Type 3 (Straight)

Straight End Effector for Xtreme Access probe shaft. Available in two versions: Copper (Cu) and Molybdenum (Mo)



75981-Cu	Cu Straight End Effector Type 3	12/bx

EMS Tweezer Style SM 110

Straight "T" shaped tips with a vertical groove inside for holding cylindrical objects up to 1mm diameter. Length: 4¾" (120mm).

Absolutely perfect for holding and installing Omniprobe Tips (sold separately). Especially if you're using Cryo-lift out and have to install the tip with the rod already inserted into the SEM chamber.

Forceps provide a firm grip and longitudainal stability reducing the chance of dropping the tip.

78250-100	EMS SM 110	each

SUPPORT FILM ON GRIDS

Support Film on grids has become a main product line for us since the demand for high quality coated grids has increased. To make your microscopy work easier and to save you a great deal of time we offer you a complete line. All of our coated grids are optically checked followed by batch testing in the EM. Packed in grid storage box.

All the grids below (except for the Beryllium Support Films) are available with the following options:

- Molybdenum grids in place of Au, Cu, or Ni
- As Silicon-free
- With ultra-thin thickness (thickness can be requested)
- Extra thick thickness

NOTE: All of our film is laid on the shiny side of the grid.

Support Film on Grids Application Guide

Which support film is best for your particular application? Are there any alternatives? What about Lacey Films?

Substrate Application	Formvar Only	Carbon Only	Formvar/ Carbon	Formvar/ SiO	Silicon SiO	Lacy Film
Diffraction Studies	—	BEST CHOICE	—	GOOD OPTION	GOOD OPTION	SUITABLE
EDS (Energy Dispersive Spectrometry)	—	GOOD OPTION	GOOD OPTION	—	—	SUITABLE
High Resolution Microscopy	—	BEST CHOICE	GOOD OPTION	GOOD OPTION	BEST CHOICE	SUITABLE
High Temp. Techniques/ Heating Stage	—	BEST CHOICE	—	—	GOOD OPTION	SUITABLE
Low Magnification Microscopy	GOOD OPTION	GOOD OPTION	BEST CHOICE	BEST CHOICE	GOOD OPTION	—
Particulate Suspension, Biological	—	BEST CHOICE	GOOD OPTION	BEST CHOICE	BEST CHOICE	SUITABLE
Particulate Suspension, Non-Biological	—	BEST CHOICE	GOOD OPTION	BEST CHOICE	BEST CHOICE	SUITABLE
Powders, Dry	—	GOOD OPTION	GOOD OPTION	BEST CHOICE	GOOD OPTION	—
Replicas, Low Temp. Techniques	GOOD OPTION	GOOD OPTION	BEST CHOICE	—	—	SUITABLE
Suspensions, Bacterial	—	BEST CHOICE	GOOD OPTION	BEST CHOICE	BEST CHOICE	SUITABLE
Suspensions, Cell Fragment	—	BEST CHOICE	BEST CHOICE	BEST CHOICE	BEST CHOICE	SUITABLE
Suspensions, Viral	—	BEST CHOICE	GOOD OPTION	GOOD OPTION	BEST CHOICE	SUITABLE
Thin Sections	GOOD OPTION	GOOD OPTION	BEST CHOICE	GOOD OPTION	BEST CHOICE	SUITABLE

1. Formvar Film Only

A thin film of pure formvar resin. The thickness range is as follows:
Standard: Approx. 10nm, **Ultra-Thin (UL):** 5-6nm, **Thick (TH):** 15-20nm, **Extra Thick (ET):** 25-50nm

Formvar Square Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FF100-Cu-25	100 MESH	standard	25/box
FF100-Cu-50			50/box
FF150-Cu-25	150 MESH	standard	25/box
FF150-Cu-50			50/box
FF200-Cu-25	200 MESH	standard	25/box
FF200-Cu-50			50/box
FF300-Cu-25	300 MESH	standard	25/box
FF300-Cu-50			50/box
FF400-Cu-25	400 MESH	standard	25/box
FF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FF100-Ni-25	100 MESH	standard	25/box
FF100-Ni-50			50/box
FF150-Ni-25	150 MESH	standard	25/box
FF150-Ni-50			50/box
FF200-Ni-25	200 MESH	standard	25/box
FF200-Ni-50			50/box
FF300-Ni-25	300 MESH	standard	25/box
FF300-Ni-50			50/box
FF400-Ni-25	400 MESH	standard	25/box
FF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FF100-Au-25	100 MESH	standard	25/box
FF100-Au-50			50/box
FF150-Au-25	150 MESH	standard	25/box
FF150-Au-50			50/box
FF200-Au-25	200 MESH	standard	25/box
FF200-Au-50			50/box
FF300-Au-25	300 MESH	standard	25/box
FF300-Au-50			50/box
FF400-Au-25	400 MESH	standard	25/box
FF400-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FF100-Cu-UL	100 MESH	ultra-thin	50/box
FF100-Cu-TH		thick	50/box
FF100-Cu-ET		extra thick	50/box
FF150-Cu-UL	150 MESH	ultra-thin	50/box
FF150-Cu-TH		thick	50/box
FF150-Cu-ET		extra thick	50/box
FF200-Cu-UL	200 MESH	ultra-thin	50/box
FF200-Cu-TH		thick	50/box
FF200-Cu-ET		extra thick	50/box
FF300-Cu-UL	300 MESH	ultra-thin	50/box
FF300-Cu-TH		thick	50/box
FF300-Cu-ET		extra thick	50/box
FF400-Cu-UL	400 MESH	ultra-thin	50/box
FF400-Cu-TH		thick	50/box
FF400-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF100-Ni-UL	100 MESH	ultra-thin	50/box
FF100-Ni-TH		thick	50/box
FF100-Ni-ET		extra thick	50/box
FF150-Ni-UL	150 MESH	ultra-thin	50/box
FF150-Ni-TH		thick	50/box
FF150-Ni-ET		extra thick	50/box
FF200-Ni-UL	200 MESH	ultra-thin	50/box
FF200-Ni-TH		thick	50/box
FF200-Ni-ET		extra thick	50/box
FF300-Ni-UL	300 MESH	ultra-thin	50/box
FF300-Ni-TH		thick	50/box
FF300-Ni-ET		extra thick	50/box
FF400-Ni-UL	400 MESH	ultra-thin	50/box
FF400-Ni-TH		thick	50/box
FF400-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF100-Au-UL	100 MESH	ultra-thin	50/box
FF100-Au-TH		thick	50/box
FF100-Au-ET		extra thick	50/box
FF150-Au-UL	150 MESH	ultra-thin	50/box
FF150-Au-TH		thick	50/box
FF150-Au-ET		extra thick	50/box
FF200-Au-UL	200 MESH	ultra-thin	50/box
FF200-Au-TH		thick	50/box
FF200-Au-ET		extra thick	50/box
FF300-Au-UL	300 MESH	ultra-thin	50/box
FF300-Au-TH		thick	50/box
FF300-Au-ET		extra thick	50/box
FF400-Au-UL	400 MESH	ultra-thin	50/box
FF400-Au-TH		thick	50/box
FF400-Au-ET		extra thick	50/box

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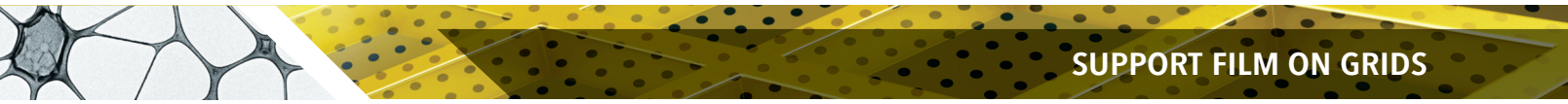

Formvar Gilder Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FF200F1-Cu-25	F1	standard	25/box
FF200F1-Cu-50			50/box
FF200F2-Cu-25	F2	standard	25/box
FF200F2-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FF200F1-Ni-25	F1	standard	25/box
FF200F1-Ni-50			50/box
FF200F2-Ni-25	F2	standard	25/box
FF200F2-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FF200F1-Au-25	F1	standard	25/box
FF200F1-Au-50			50/box
FF200F2-Au-25	F2	standard	25/box
FF200F2-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FF200F1-Cu-UL	F1	ultra-thin	50/box
FF200F1-Cu-TH		thick	50/box
FF200F1-Cu-ET		extra thick	50/box
FF200F2-Cu-UL	F2	ultra-thin	50/box
FF200F2-Cu-TH		thick	50/box
FF200F2-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF200F1-Ni-UL	F1	ultra-thin	50/box
FF200F1-Ni-TH		thick	50/box
FF200F1-Ni-ET		extra thick	50/box
FF200F2-Ni-UL	F2	ultra-thin	50/box
FF200F2-Ni-TH		thick	50/box
FF200F2-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF200F1-Au-UL	F1	ultra-thin	50/box
FF200F1-Au-TH		thick	50/box
FF200F1-Au-ET		extra thick	50/box
FF200F2-Au-UL	F2	ultra-thin	50/box
FF200F2-Au-TH		thick	50/box
FF200F2-Au-ET		extra thick	50/box

Formvar London Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FFLF135-Cu-25	LF135	standard	25/box
FFLF135-Cu-50			50/box
FFLF200-Cu-25	LF200	standard	25/box
FFLF200-Cu-50			50/box
FFLF400-Cu-25	LF400	standard	25/box
FFLF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FFLF135-Ni-25	LF135	standard	25/box
FFLF135-Ni-50			50/box
FFLF200-Ni-25	LF200	standard	25/box
FFLF200-Ni-50			50/box
FFLF400-Ni-25	LF400	standard	25/box
FFLF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FFLF135-Au-25	LF135	standard	25/box
FFLF135-Au-50			50/box
FFLF200-Au-25	LF200	standard	25/box
FFLF400-Au-25	LF400	standard	25/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FFLF135-Cu-UL	LF135	ultra-thin	50/box
FFLF135-Cu-TH		thick	50/box
FFLF135-Cu-ET		extra thick	50/box
FFLF200-Cu-UL	LF200	ultra-thin	50/box
FFLF200-Cu-TH		thick	50/box
FFLF200-Cu-ET		extra thick	50/box
FFLF400-Cu-UL	LF400	ultra-thin	50/box
FFLF400-Cu-TH		thick	50/box
FFLF400-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFLF135-Ni-UL	LF135	ultra-thin	50/box
FFLF135-Ni-TH		thick	50/box
FFLF135-Ni-ET		extra thick	50/box
FFLF200-Ni-UL	LF200	ultra-thin	50/box
FFLF200-Ni-TH		thick	50/box
FFLF200-Ni-ET		extra thick	50/box
FFLF400-Ni-UL	LF400	ultra-thin	50/box
FFLF400-Ni-TH		thick	50/box
FFLF400-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFLF135-Au-UL	LF135	ultra-thin	50/box
FFLF135-Au-TH		thick	50/box
FFLF135-Au-ET		extra thick	50/box

Formvar Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FF100H-Cu-25	100 MESH	standard	25/box
FF100H-Cu-50			50/box
FF200H-Cu-25	200 MESH	standard	25/box
FF200H-Cu-50			50/box
FF300H-Cu-25	300 MESH	standard	25/box
FF300H-Cu-50			50/box
FF400H-Cu-25	400 MESH	standard	25/box
FF400H-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FF100H-Ni-25	100 MESH	standard	25/box
FF100H-Ni-50			50/box
FF200H-Ni-25	200 MESH	standard	25/box
FF200H-Ni-50			50/box
FF300H-Ni-25	300 MESH	standard	25/box
FF300H-Ni-50			50/box
FF400H-Ni-25	400 MESH	standard	25/box
FF400H-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FF100H-Au-25	100 MESH	standard	25/box
FF100H-Au-50			50/box
FF200H-Au-25	200 MESH	standard	25/box
FF200H-Au-50			50/box
FF300H-Au-25	300 MESH	standard	25/box
FF300H-Au-50			50/box
FF400H-Au-25	400 MESH	standard	25/box
FF400H-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FF100H-Cu-UL	100 MESH	ultra-thin	50/box
FF100H-Cu-TH		thick	50/box
FF100H-Cu-ET		extra thick	50/box
FF200H-Cu-UL	200 MESH	ultra-thin	50/box
FF200H-Cu-TH		thick	50/box
FF200H-Cu-ET		extra thick	50/box
FF300H-Cu-UL	300 MESH	ultra-thin	50/box
FF300H-Cu-TH		thick	50/box
FF300H-Cu-ET		extra thick	50/box
FF400H-Cu-UL	400 MESH	ultra-thin	50/box
FF400H-Cu-TH		thick	50/box
FF400H-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF100H-Ni-UL	100 MESH	ultra-thin	50/box
FF100H-Ni-TH		thick	50/box
FF100H-Ni-ET		extra thick	50/box
FF200H-Ni-UL	200 MESH	ultra-thin	50/box
FF200H-Ni-TH		thick	50/box
FF200H-Ni-ET		extra thick	50/box
FF300H-Ni-UL	300 MESH	ultra-thin	50/box
FF300H-Ni-TH		thick	50/box
FF300H-Ni-ET		extra thick	50/box
FF400H-Ni-UL	400 MESH	ultra-thin	50/box
FF400H-Ni-TH		thick	50/box
FF400H-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF100H-Au-UL	100 MESH	ultra-thin	50/box
FF100H-Au-TH		thick	50/box
FF100H-Au-ET		extra thick	50/box
FF200H-Au-UL	200 MESH	ultra-thin	50/box
FF200H-Au-TH		thick	50/box
FF200H-Au-ET		extra thick	50/box
FF300H-Au-UL	300 MESH	ultra-thin	50/box
FF300H-Au-TH		thick	50/box
FF300H-Au-ET		extra thick	50/box
FF400H-Au-UL	400 MESH	ultra-thin	50/box
FF400H-Au-TH		thick	50/box
FF400H-Au-ET		extra thick	50/box

SUPPORT FILM ON GRIDS

Formvar Thin Bar Square Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FFT200-Cu-25	200 MESH	standard	25/box
FFT200-Cu-50			50/box
FFT300-Cu-25	300 MESH	standard	25/box
FFT300-Cu-50			50/box
FFT400-Cu-25	400 MESH	standard	25/box
FFT400-Cu-50			50/box
FFT1000-Cu-25	1000 MESH	standard	25/box
FFT1000-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FFT200-Ni-25	200 MESH	standard	25/box
FFT200-Ni-50			50/box
FFT300-Ni-25	300 MESH	standard	25/box
FFT300-Ni-50			50/box
FFT400-Ni-25	400 MESH	standard	25/box
FFT400-Ni-50			50/box
FFT1000-Ni-25	1000 MESH	standard	25/box
FFT1000-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FFT200-Au-25	200 MESH	standard	25/box
FFT200H-Au-50			50/box
FFT300-Au-25	300 MESH	standard	25/box
FFT300-Au-50			50/box
FFT400-Au-25	400 MESH	standard	25/box
FFT400-Au-50			50/box
FFT1000-Au-25	1000 MESH	standard	25/box
FFT1000-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FFT200-Cu-UL	200 MESH	ultra-thin	50/box
FFT200-Cu-TH		thick	50/box
FFT200-Cu-ET		extra thick	50/box
FFT300-Cu-UL	300 MESH	ultra-thin	50/box
FFT300-Cu-TH		thick	50/box
FFT300-Cu-ET		extra thick	50/box
FFT400-Cu-UL	400 MESH	ultra-thin	50/box
FFT400-Cu-TH		thick	50/box
FFT400-Cu-ET		extra thick	50/box
FFT1000-Cu-UL	1000 MESH	ultra-thin	50/box
FFT1000-Cu-TH		thick	50/box
FFT1000-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFT200-Ni-UL	200 MESH	ultra-thin	50/box
FFT200-Ni-TH		thick	50/box
FFT200-Ni-ET		extra thick	50/box
FFT300-Ni-UL	300 MESH	ultra-thin	50/box
FFT300-Ni-TH		thick	50/box
FFT300-Ni-ET		extra thick	50/box
FFT400-Ni-UL	400 MESH	ultra-thin	50/box
FFT400-Ni-TH		thick	50/box
FFT400-Ni-ET		extra thick	50/box
FFT1000-Ni-UL	1000 MESH	ultra-thin	50/box
FFT1000-Ni-TH		thick	50/box
FFT1000-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFT200-Au-UL	200 MESH	ultra-thin	50/box
FFT200-Au-TH		thick	50/box
FFT200-Au-ET		extra thick	50/box
FFT300-Au-UL	300 MESH	ultra-thin	50/box
FFT300-Au-TH		thick	50/box
FFT300-Au-ET		extra thick	50/box
FFT400-Au-UL	400 MESH	ultra-thin	50/box
FFT400-Au-TH		thick	50/box
FFT400-Au-ET		extra thick	50/box
FFT1000-Au-UL	1000 MESH	ultra-thin	50/box
FFT1000-Au-TH		thick	50/box
FFT1000-Au-ET		extra thick	50/box

Formvar Thin Bar Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FFTH200-Cu-25	200 MESH	standard	25/box
FFTH200-Cu-50			50/box
FFTH300-Cu-25	300 MESH	standard	25/box
FFTH300-Cu-50			50/box
FFTH400-Cu-25	400 MESH	standard	25/box
FFTH400-Cu-50			50/box
FFTH600-Cu-25	600 MESH	standard	25/box
FFTH600-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FFTH200-Ni-25	200 MESH	standard	25/box
FFTH200-Ni-50			50/box
FFTH300-Ni-25	300 MESH	standard	25/box
FFTH300-Ni-50			50/box
FFTH400-Ni-25	400 MESH	standard	25/box
FFTH400-Ni-50			50/box
FFTH600-Ni-25	600 MESH	standard	25/box
FFTH600-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FFTH200-Au-25	200 MESH	standard	25/box
FFTH200-Au-50			50/box
FFTH300-Au-25	300 MESH	standard	25/box
FFTH300-Au-50			50/box
FFTH400-Au-25	400 MESH	standard	25/box
FFTH400-Au-50			50/box
FFTH600-Au-25	600 MESH	standard	25/box
FFTH600-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FFTH200-Cu-UL	200 MESH	ultra-thin	50/box
FFTH200-Cu-TH		thick	50/box
FFTH200-Cu-ET		extra thick	50/box
FFTH300-Cu-UL	300 MESH	ultra-thin	50/box
FFTH300-Cu-TH		thick	50/box
FFTH300-Cu-ET		extra thick	50/box
FFTH400-Cu-UL	400 MESH	ultra-thin	50/box
FFTH400-Cu-TH		thick	50/box
FFTH400-Cu-ET		extra thick	50/box
FFTH600-Cu-UL	600 MESH	ultra-thin	50/box
FFTH600-Cu-TH		thick	50/box
FFTH600-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFTH200-Ni-UL	200 MESH	ultra-thin	50/box
FFTH200-Ni-TH		thick	50/box
FFTH200-Ni-ET		extra thick	50/box
FFTH300-Ni-UL	300 MESH	ultra-thin	50/box
FFTH300-Ni-TH		thick	50/box
FFTH300-Ni-ET		extra thick	50/box
FFTH400-Ni-UL	400 MESH	ultra-thin	50/box
FFTH400-Ni-TH		thick	50/box
FFTH400-Ni-ET		extra thick	50/box
FFTH600-Ni-UL	600 MESH	ultra-thin	50/box
FFTH600-Ni-TH		thick	50/box
FFTH600-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFTH200-Au-UL	200 MESH	ultra-thin	50/box
FFTH200-Au-TH		thick	50/box
FFTH200-Au-ET		extra thick	50/box
FFTH300-Au-UL	300 MESH	ultra-thin	50/box
FFTH300-Au-TH		thick	50/box
FFTH300-Au-ET		extra thick	50/box
FFTH400-Au-UL	400 MESH	ultra-thin	50/box
FFTH400-Au-TH		thick	50/box
FFTH400-Au-ET		extra thick	50/box
FFTH600-Au-UL	600 MESH	ultra-thin	50/box
FFTH600-Au-TH		thick	50/box
FFTH600-Au-ET		extra thick	50/box

Formvar Slots

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FF205-Cu-25	2 x 0.5mm	standard	25/box
FF205-Cu-50			50/box
FF2010-Cu-25	2 x 1mm	standard	25/box
FF2010-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FF205-Ni-25	2 x 0.5mm	standard	25/box
FF205-Ni-50			50/box
FF2010-Ni-25	2 x 1mm	standard	25/box
FF2010-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FF205-Au-25	2 x 0.5mm	standard	25/box
FF205-Au-50			50/box
FF2010-Au-25	2 x 1mm	standard	25/box
FF2010-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FF205-Cu-UL	2 x 0.5mm	ultra-thin	50/box
FF205-Cu-TH		thick	50/box
FF205-Cu-ET		extra thick	50/box
FF2010-Cu-UL	2 x 1mm	ultra-thin	50/box
FF2010-Cu-TH		thick	50/box
FF2010-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF205-Ni-UL	2 x 0.5mm	ultra-thin	50/box
FF205-Ni-TH		thick	50/box
FF205-Ni-ET		extra thick	50/box
FF2010-Ni-UL	2 x 1mm	ultra-thin	50/box
FF2010-Ni-TH		thick	50/box
FF2010-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FF205-Au-UL	2 x 0.5mm	ultra-thin	50/box
FF205-Au-TH		thick	50/box
FF205-Au-ET		extra thick	50/box
FF2010-Au-UL	2 x 1mm	ultra-thin	50/box
FF2010-Au-TH		thick	50/box
FF2010-Au-ET		extra thick	50/box

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III Formvar Single Hole

COPPER NICKEL

Standard Thickness

Cat. #	Type	Thickness	Qty
FFGA75-Cu-25	75 micron	standard	25/box
FFGA75-Cu-50			50/box
FFGA100-Cu-25	100 micron	standard	25/box
FFGA100-Cu-50			50/box
FFGA150-Cu-25	150 micron	standard	25/box
FFGA150-Cu-50			50/box
FFGA200-Cu-25	200 micron	standard	25/box
FFGA200-Cu-50			50/box
FFGA300-Cu-25	300 micron	standard	25/box
FFGA300-Cu-50			50/box
FFGA400-Cu-25	400 micron	standard	25/box
FFGA400-Cu-50			50/box
FFGA600-Cu-25	600 micron	standard	25/box
FFGA600-Cu-50			50/box
FFGA800-Cu-25	800 micron	standard	25/box
FFGA800-Cu-50			50/box
FFGA1000-Cu-25	1000 micron	standard	25/box
FFGA1000-Cu-50			50/box
FFGA1500-Cu-25	1500 micron	standard	25/box
FFGA1500-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FFGA75-Ni-25	75 micron	standard	25/box
FFGA75-Ni-50			50/box
FFGA100-Ni-25	100 micron	standard	25/box
FFGA100-Ni-50			50/box
FFGA150-Ni-25	150 micron	standard	25/box
FFGA150-Ni-50			50/box
FFGA200-Ni-25	200 micron	standard	25/box
FFGA200-Ni-50			50/box
FFGA300-Ni-25	300 micron	standard	25/box
FFGA300-Ni-50			50/box
FFGA400-Ni-25	400 micron	standard	25/box
FFGA400-Ni-50			50/box
FFGA600-Ni-25	600 micron	standard	25/box
FFGA600-Ni-50			50/box
FFGA800-Ni-25	800 micron	standard	25/box
FFGA800-Ni-50			50/box
FFGA1000-Ni-25	1000 micron	standard	25/box
FFGA1000-Ni-50			50/box
FFGA1500-Ni-25	1500 micron	standard	25/box
FFGA1500-Ni-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FFGA75-Cu-UL	75 micron	ultra-thin	50/box
FFGA75-Cu-TH		thick	50/box
FFGA75-Cu-ET		extra thick	50/box
FFGA100-Cu-UL	100 micron	ultra-thin	50/box
FFGA100-Cu-TH		thick	50/box
FFGA100-Cu-ET		extra thick	50/box
FFGA150-Cu-UL	150 micron	ultra-thin	50/box
FFGA150-Cu-TH		thick	50/box
FFGA150-Cu-ET		extra thick	50/box
FFGA200-Cu-UL	200 micron	ultra-thin	50/box
FFGA200-Cu-TH		thick	50/box
FFGA200-Cu-ET		extra thick	50/box
FFGA300-Cu-UL	300 micron	ultra-thin	50/box
FFGA300-Cu-TH		thick	50/box
FFGA300-Cu-ET		extra thick	50/box
FFGA400-Cu-UL	400 micron	ultra-thin	50/box
FFGA400-Cu-TH		thick	50/box
FFGA400-Cu-ET		extra thick	50/box
FFGA600-Cu-UL	600 micron	ultra-thin	50/box
FFGA600-Cu-TH		thick	50/box
FFGA600-Cu-ET		extra thick	50/box
FFGA800-Cu-UL	800 micron	ultra-thin	50/box
FFGA800-Cu-TH		thick	50/box
FFGA800-Cu-ET		extra thick	50/box
FFGA1000-Cu-UL	1000 micron	ultra-thin	50/box
FFGA1000-Cu-TH		thick	50/box
FFGA1000-Cu-ET		extra thick	50/box
FFGA1500-Cu-UL	1500 micron	ultra-thin	50/box
FFGA1500-Cu-TH		thick	50/box
FFGA1500-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
FFGA75-Ni-UL	75 micron	ultra-thin	50/box
FFGA75-Ni-TH		thick	50/box
FFGA75-Ni-ET		extra thick	50/box
FFGA100-Ni-UL	100 micron	ultra-thin	50/box
FFGA100-Ni-TH		thick	50/box
FFGA100-Ni-ET		extra thick	50/box
FFGA150-Ni-UL	150 micron	ultra-thin	50/box
FFGA150-Ni-TH		thick	50/box
FFGA150-Ni-ET		extra thick	50/box
FFGA200-Ni-UL	200 micron	ultra-thin	50/box
FFGA200-Ni-TH		thick	50/box
FFGA200-Ni-ET		extra thick	50/box
FFGA300-Ni-UL	300 micron	ultra-thin	50/box
FFGA300-Ni-TH		thick	50/box
FFGA300-Ni-ET		extra thick	50/box
FFGA400-Ni-UL	400 micron	ultra-thin	50/box
FFGA400-Ni-TH		thick	50/box
FFGA400-Ni-ET		extra thick	50/box
FFGA600-Ni-UL	600 micron	ultra-thin	50/box
FFGA600-Ni-TH		thick	50/box
FFGA600-Ni-ET		extra thick	50/box
FFGA800-Ni-UL	800 micron	ultra-thin	50/box
FFGA800-Ni-TH		thick	50/box
FFGA800-Ni-ET		extra thick	50/box
FFGA1000-Ni-UL	1000 micron	ultra-thin	50/box
FFGA1000-Ni-TH		thick	50/box
FFGA1000-Ni-ET		extra thick	50/box
FFGA1500-Ni-UL	1500 micron	ultra-thin	50/box
FFGA1500-Ni-TH		thick	50/box
FFGA1500-Ni-ET		extra thick	50/box

TECHNICAL TIP

A Simple Method for Handling Grids

A simplified method for handling EM grids is described. This new method not only offers safety and identification of your samples but offers you improved handling, temporary storage, and identification of grids bearing ultrathin sections as well as a novel method for preparing bulk samples.

Gorycki, M.(1992). A Simple Method for Handling Grids. Biotechnic & Histochemistry 67/5, 313-314.

2. Carbon Film Only

A thin film of pure carbon deposited on one side of the grid. The thickness range is as follows:
Standard: Approx. 5-6nm, **Ultra-Thin (UL):** 3-4nm, **Thick (TH):** 10nm, **Extra Thick (ET):** 20-30nm

Carbon Square Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CF150-Cu-25	150 MESH	standard	25/box
CF150-Cu-50			50/box
CF200-Cu-25	200 MESH	standard	25/box
CF200-Cu-50			50/box
CF300-Cu-25	300 MESH	standard	25/box
CF300-Cu-50			50/box
CF400-Cu-25	400 MESH	standard	25/box
CF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CF150-Ni-25	150 MESH	standard	25/box
CF150-Ni-50			50/box
CF200-Ni-25	200 MESH	standard	25/box
CF200-Ni-50			50/box
CF300-Ni-25	300 MESH	standard	25/box
CF300-Ni-50			50/box
CF400-Ni-25	400 MESH	standard	25/box
CF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CF150-Au-25	150 MESH	standard	25/box
CF150-Au-50			50/box
CF200-Au-25	200 MESH	standard	25/box
CF200-Au-50			50/box
CF300-Au-25	300 MESH	standard	25/box
CF300-Au-50			50/box
CF400-Au-25	400 MESH	standard	25/box
CF400-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CF150-Cu-UL	150 MESH	ultra-thin	50/box
CF150-Cu-TH		thick	50/box
CF150-Cu-ET		extra thick	50/box
CF200-Cu-UL	200 MESH	ultra-thin	50/box
CF200-Cu-TH		thick	50/box
CF200-Cu-ET		extra thick	50/box
CF300-Cu-UL	300 MESH	ultra-thin	50/box
CF300-Cu-TH		thick	50/box
CF300-Cu-ET		extra thick	50/box
CF400-Cu-UL	400 MESH	ultra-thin	50/box
CF400-Cu-TH		thick	50/box
CF400-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF150-Ni-UL	150 MESH	ultra-thin	50/box
CF150-Ni-TH		thick	50/box
CF150-Ni-ET		extra thick	50/box
CF200-Ni-UL	200 MESH	ultra-thin	50/box
CF200-Ni-TH		thick	50/box
CF200-Ni-ET		extra thick	50/box
CF300-Ni-UL	300 MESH	ultra-thin	50/box
CF300-Ni-TH		thick	50/box
CF300-Ni-ET		extra thick	50/box
CF400-Ni-UL	400 MESH	ultra-thin	50/box
CF400-Ni-TH		thick	50/box
CF400-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF150-Au-UL	150 MESH	ultra-thin	50/box
CF150-Au-TH		thick	50/box
CF150-Au-ET		extra thick	50/box
CF200-Au-UL	200 MESH	ultra-thin	50/box
CF200-Au-TH		thick	50/box
CF200-Au-ET		extra thick	50/box
CF300-Au-UL	300 MESH	ultra-thin	50/box
CF300-Au-TH		thick	50/box
CF300-Au-ET		extra thick	50/box
CF400-Au-UL	400 MESH	ultra-thin	50/box
CF400-Au-TH		thick	50/box
CF400-Au-ET		extra thick	50/box

Carbon Gilder Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CF200F1-Cu-25	F1	standard	25/box
CF200F1-Cu-50			50/box
CF200F2-Cu-25	F2	standard	25/box
CF200F2-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CF200F1-Ni-25	F1	standard	25/box
CF200F1-Ni-50			50/box
CF200F2-Ni-25	F2	standard	25/box
CF200F2-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CF200F1-Au-25	F1	standard	25/box
CF200F1-Au-50			50/box
CF200F2-Au-25	F2	standard	25/box
CF200F2-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CF200F1-Cu-UL	F1	ultra-thin	50/box
CF200F1-Cu-TH		thick	50/box
CF200F1-Cu-ET		extra thick	50/box
CF200F2-Cu-UL	F2	ultra-thin	50/box
CF200F2-Cu-TH		thick	50/box
CF200F2-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF200F1-Ni-UL	F1	ultra-thin	50/box
CF200F1-Ni-TH		thick	50/box
CF200F1-Ni-ET		extra thick	50/box
CF200F2-Ni-UL	F2	ultra-thin	50/box
CF200F2-Ni-TH		thick	50/box
CF200F2-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF200F1-Au-UL	F1	ultra-thin	50/box
CF200F1-Au-TH		thick	50/box
CF200F1-Au-ET		extra thick	50/box
CF200F2-Au-UL	F2	ultra-thin	50/box
CF200F2-Au-TH		thick	50/box
CF200F2-Au-ET		extra thick	50/box

TECHNICAL TIP

The Preparation of Adhesive Coated Grids for Picking Up Carbon Film to Make Carbon Coated Grids

The following steps should be followed in the preparation of adhesive coated grids:

1. Submerge about 2" of Scotch clear tape (3M) into 10ml of Dichloroethane (Ethylene Dichloride); shake and discard the tape.
2. The solution now becomes “grid-glue”
3. Place the grids (dull side up) on a piece of filter paper (dust-free room).
4. Take a pipette and place a drop of “grid-glue” on top of each grid.
5. Let the grids dry.
6. The grids are now ready to pick up the carbon foil and make the carbon coated grids.

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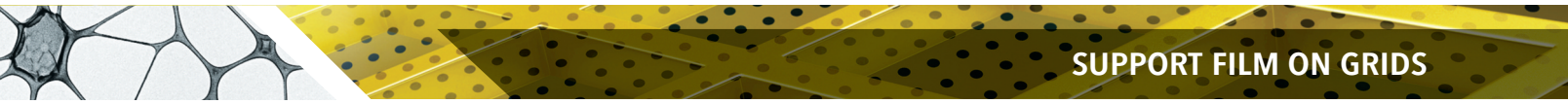

III Carbon London Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CFLF135-Cu-25	LF135	standard	25/box
CFLF135-Cu-50			50/box
CFLF200-Cu-25	LF200	standard	25/box
CFLF200-Cu-50			50/box
CFLF400-Cu-25	LF400	standard	25/box
CFLF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CFLF135-Ni-25	LF135	standard	25/box
CFLF135-Ni-50			50/box
CFLF200-Ni-25	LF200	standard	25/box
CFLF200-Ni-50			50/box
CFLF400-Ni-25	LF400	standard	25/box
CFLF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CFLF135-Au-25	LF135	standard	25/box
CFLF135-Au-50			50/box
CFLF200-Au-25	LF200	standard	25/box
CFLF400-Au-25	LF400	standard	25/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CFLF135-Cu-UL	LF135	ultra-thin	50/box
CFLF135-Cu-TH		thick	50/box
CFLF135-Cu-ET		extra thick	50/box
CFLF200-Cu-UL	LF200	ultra-thin	50/box
CFLF200-Cu-TH		thick	50/box
CFLF200-Cu-ET		extra thick	50/box
CFLF400-Cu-UL	LF400	ultra-thin	50/box
CFLF400-Cu-TH		thick	50/box
CFLF400-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFLF135-Ni-UL	LF135	ultra-thin	50/box
CFLF135-Ni-TH		thick	50/box
CFLF135-Ni-ET		extra thick	50/box
CFLF200-Ni-UL	LF200	ultra-thin	50/box
CFLF200-Ni-TH		thick	50/box
CFLF200-Ni-ET		extra thick	50/box
CFLF400-Ni-UL	LF400	ultra-thin	50/box
CFLF400-Ni-TH		thick	50/box
CFLF400-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFLF135-Au-UL	LF135	ultra-thin	50/box
CFLF135-Au-TH		thick	50/box
CFLF135-Au-ET		extra thick	50/box

III Carbon Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CF100H-Cu-25	100 MESH	standard	25/box
CF100H-Cu-50			50/box
CF200H-Cu-25	200 MESH	standard	25/box
CF200H-Cu-50			50/box
CF300H-Cu-25	300 MESH	standard	25/box
CF300H-Cu-50			50/box
CF400H-Cu-25	400 MESH	standard	25/box
CF400H-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CF100H-Ni-25	100 MESH	standard	25/box
CF100H-Ni-50			50/box
CF200H-Ni-25	200 MESH	standard	25/box
CF200H-Ni-50			50/box
CF300H-Ni-25	300 MESH	standard	25/box
CF300H-Ni-50			50/box
CF400H-Ni-25	400 MESH	standard	25/box
CF400H-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CF100H-Au-25	100 MESH	standard	25/box
CF100H-Au-50			50/box
CF200H-Au-25	200 MESH	standard	25/box
CF200H-Au-50			50/box
CF300H-Au-25	300 MESH	standard	25/box
CF300H-Au-50			50/box
CF400H-Au-25	400 MESH	standard	25/box
CF400H-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CF100H-Cu-UL	100 MESH	ultra-thin	50/box
CF100H-Cu-TH		thick	50/box
CF100H-Cu-ET		extra thick	50/box
CF200H-Cu-UL	200 MESH	ultra-thin	50/box
CF200H-Cu-TH		thick	50/box
CF200H-Cu-ET		extra thick	50/box
CF300H-Cu-UL	300 MESH	ultra-thin	50/box
CF300H-Cu-TH		thick	50/box
CF300H-Cu-ET		extra thick	50/box
CF400H-Cu-UL	400 MESH	ultra-thin	50/box
CF400H-Cu-TH		thick	50/box
CF400H-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF100H-Ni-UL	100 MESH	ultra-thin	50/box
CF100H-Ni-TH		thick	50/box
CF100H-Ni-ET		extra thick	50/box
CF200H-Ni-UL	200 MESH	ultra-thin	50/box
CF200H-Ni-TH		thick	50/box
CF200H-Ni-ET		extra thick	50/box
CF300H-Ni-UL	300 MESH	ultra-thin	50/box
CF300H-Ni-TH		thick	50/box
CF300H-Ni-ET		extra thick	50/box
CF400H-Ni-UL	400 MESH	ultra-thin	50/box
CF400H-Ni-TH		thick	50/box
CF400H-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CF100H-Au-UL	100 MESH	ultra-thin	50/box
CF100H-Au-TH		thick	50/box
CF100H-Au-ET		extra thick	50/box
CF200H-Au-UL	200 MESH	ultra-thin	50/box
CF200H-Au-TH		thick	50/box
CF200H-Au-ET		extra thick	50/box
CF300H-Au-UL	300 MESH	ultra-thin	50/box
CF300H-Au-TH		thick	50/box
CF300H-Au-ET		extra thick	50/box
CF400H-Au-UL	400 MESH	ultra-thin	50/box
CF400H-Au-TH		thick	50/box
CF400H-Au-ET		extra thick	50/box

TECHNICAL TIP

How do Nickel and Copper grids react with Periodic Acid?

Periodic Acid + Ni... Ni-Periodate + H_2
Periodic Acid + Cu... Cu-Periodate + H_2
In this case you should use Gold Grids.

SUPPORT FILM ON GRIDS

Carbon Thin Bar Square Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CFT200-Cu-25	200 MESH	standard	25/box
CFT200-Cu-50			50/box
CFT300-Cu-25	300 MESH	standard	25/box
CFT300-Cu-50			50/box
CFT400-Cu-25	400 MESH	standard	25/box
CFT400-Cu-50			50/box
CFT1000-Cu-25	1000 MESH	standard	25/box
CFT1000-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CFT200-Ni-25	200 MESH	standard	25/box
CFT200-Ni-50			50/box
CFT300-Ni-25	300 MESH	standard	25/box
CFT300-Ni-50			50/box
CFT400-Ni-25	400 MESH	standard	25/box
CFT400-Ni-50			50/box
CFT1000-Ni-25	1000 MESH	standard	25/box
CFT1000-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CFT200-Au-25	200 MESH	standard	25/box
CFT200-Au-50			50/box
CFT300-Au-25	300 MESH	standard	25/box
CFT300-Au-50			50/box
CFT400-Au-25	400 MESH	standard	25/box
CFT400-Au-50			50/box
CFT1000-Au-25	1000 MESH	standard	25/box
CFT1000-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CFT200-Cu-UL	200 MESH	ultra-thin	50/box
CFT200-Cu-TH		thick	50/box
CFT200-Cu-ET		extra thick	50/box
CFT300-Cu-UL	300 MESH	ultra-thin	50/box
CFT300-Cu-TH		thick	50/box
CFT300-Cu-ET		extra thick	50/box
CFT400-Cu-UL	400 MESH	ultra-thin	50/box
CFT400-Cu-TH		thick	50/box
CFT400-Cu-ET		extra thick	50/box
CFT1000-Cu-UL	1000 MESH	ultra-thin	50/box
CFT1000-Cu-TH		thick	50/box
CFT1000-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFT200-Ni-UL	200 MESH	ultra-thin	50/box
CFT200-Ni-TH		thick	50/box
CFT200-Ni-ET		extra thick	50/box
CFT300-Ni-UL	300 MESH	ultra-thin	50/box
CFT300-Ni-TH		thick	50/box
CFT300-Ni-ET		extra thick	50/box
CFT400-Ni-UL	400 MESH	ultra-thin	50/box
CFT400-Ni-TH		thick	50/box
CFT400-Ni-ET		extra thick	50/box
CFT1000-Ni-UL	1000 MESH	ultra-thin	50/box
CFT1000-Ni-TH		thick	50/box
CFT1000-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFT200-Au-UL	200 MESH	ultra-thin	50/box
CFT200-Au-TH		thick	50/box
CFT200-Au-ET		extra thick	50/box
CFT300-Au-UL	300 MESH	ultra-thin	50/box
CFT300-Au-TH		thick	50/box
CFT300-Au-ET		extra thick	50/box
CFT400-Au-UL	400 MESH	ultra-thin	50/box
CFT400-Au-TH		thick	50/box
CFT400-Au-ET		extra thick	50/box
CFT1000-Au-UL	1000 MESH	ultra-thin	50/box
CFT1000-Au-TH		thick	50/box
CFT1000-Au-ET		extra thick	50/box

Carbon Thin Bar Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CFTH200-Cu-25	200 MESH	standard	25/box
CFTH200-Cu-50			50/box
CFTH300-Cu-25	300 MESH	standard	25/box
CFTH300-Cu-50			50/box
CFTH400-Cu-25	400 MESH	standard	25/box
CFTH400-Cu-50			50/box
CFTH600-Cu-25	600 MESH	standard	25/box
CFTH600-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CFTH200-Ni-25	200 MESH	standard	25/box
CFTH200-Ni-50			50/box
CFTH300-Ni-25	300 MESH	standard	25/box
CFTH300-Ni-50			50/box
CFTH400-Ni-25	400 MESH	standard	25/box
CFTH400-Ni-50			50/box
CFTH600-Ni-25	600 MESH	standard	25/box
CFTH600-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CFTH200-Au-25	200 MESH	standard	25/box
CFTH200-Au-50			50/box
CFTH300-Au-25	300 MESH	standard	25/box
CFTH300-Au-50			50/box
CFTH400-Au-25	400 MESH	standard	25/box
CFTH400-Au-50			50/box
CFTH600-Au-25	600 MESH	standard	25/box
CFTH600-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CFTH200-Cu-UL	200 MESH	ultra-thin	50/box
CFTH200-Cu-TH		thick	50/box
CFTH200-Cu-ET		extra thick	50/box
CFTH300-Cu-UL	300 MESH	ultra-thin	50/box
CFTH300-Cu-TH		thick	50/box
CFTH300-Cu-ET		extra thick	50/box
CFTH400-Cu-UL	400 MESH	ultra-thin	50/box
CFTH400-Cu-TH		thick	50/box
CFTH400-Cu-ET		extra thick	50/box
CFTH600-Cu-UL	600 MESH	ultra-thin	50/box
CFTH600-Cu-TH		thick	50/box
CFTH600-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFTH200-Ni-UL	200 MESH	ultra-thin	50/box
CFTH200-Ni-TH		thick	50/box
CFTH200-Ni-ET		extra thick	50/box
CFTH300-Ni-UL	300 MESH	ultra-thin	50/box
CFTH300-Ni-TH		thick	50/box
CFTH300-Ni-ET		extra thick	50/box
CFTH400-Ni-UL	400 MESH	ultra-thin	50/box
CFTH400-Ni-TH		thick	50/box
CFTH400-Ni-ET		extra thick	50/box
CFTH600-Ni-UL	600 MESH	ultra-thin	50/box
CFTH600-Ni-TH		thick	50/box
CFTH600-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFTH200-Au-UL	200 MESH	ultra-thin	50/box
CFTH200-Au-TH		thick	50/box
CFTH200-Au-ET		extra thick	50/box
CFTH300-Au-UL	300 MESH	ultra-thin	50/box
CFTH300-Au-TH		thick	50/box
CFTH300-Au-ET		extra thick	50/box
CFTH400-Au-UL	400 MESH	ultra-thin	50/box
CFTH400-Au-TH		thick	50/box
CFTH400-Au-ET		extra thick	50/box
CFTH600-Au-UL	600 MESH	ultra-thin	50/box
CFTH600-Au-TH		thick	50/box
CFTH600-Au-ET		extra thick	50/box

Carbon Slots

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
CF205-Cu-25	2 x 0.5mm	standard	25/box
CF205-Cu-50			50/box
CF2010-Cu-25	2 x 1mm	standard	25/box
CF2010-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CF205-Ni-25	2 x 0.5mm	standard	25/box
CF205-Ni-50			50/box
CF2010-Ni-25	2 x 1mm	standard	25/box
CF2010-Ni-50			50/box

Cat. #	Type	Thickness	Qty
CF205-Au-25	2 x 0.5mm	standard	25/box
CF205-Au-50			50/box
CF2010-Au-25	2 x 1mm	standard	25/box
CF2010-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CFT205-Cu-UL	2 x 0.5mm	ultra-thin	50/box
CFT205-Cu-TH		thick	50/box
CFT205-Cu-ET		extra thick	50/box
CFT2010-Cu-UL	2 x 1mm	ultra-thin	50/box
CFT2010-Cu-TH		thick	50/box
CFT2010-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFT205-Ni-UL	2 x 0.5mm	ultra-thin	50/box
CFT205-Ni-TH		thick	50/box
CFT205-Ni-ET		extra thick	50/box
CFT2010-Ni-UL	2 x 1mm	ultra-thin	50/box
CFT2010-Ni-TH		thick	50/box
CFT2010-Ni-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFT205-Au-UL	2 x 0.5mm	ultra-thin	50/box
CFT205-Au-TH		thick	50/box
CFT205-Au-ET		extra thick	50/box
CFT2010-Au-UL	2 x 1mm	ultra-thin	50/box
CFT2010-Au-TH		thick	50/box
CFT2010-Au-ET		extra thick	50/box

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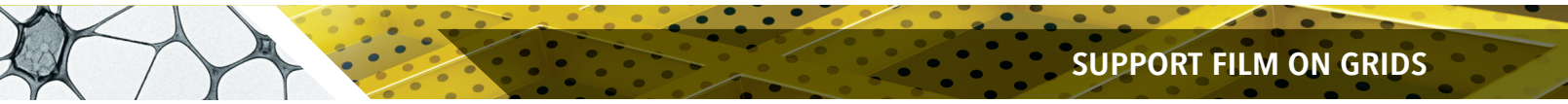

III Carbon Single Hole

COPPER NICKEL

Standard Thickness

Cat. #	Type	Thickness	Qty
CFGA75-Cu-25	75 micron	standard	25/box
CFGA75-Cu-50			50/box
CFGA100-Cu-25	100 micron	standard	25/box
CFGA100-Cu-50			50/box
CFGA150-Cu-25	150 micron	standard	25/box
CFGA150-Cu-50			50/box
CFGA200-Cu-25	200 micron	standard	25/box
CFGA200-Cu-50			50/box
CFGA300-Cu-25	300 micron	standard	25/box
CFGA300-Cu-50			50/box
CFGA400-Cu-25	400 micron	standard	25/box
CFGA400-Cu-50			50/box
CFGA600-Cu-25	600 micron	standard	25/box
CFGA600-Cu-50			50/box
CFGA800-Cu-25	800 micron	standard	25/box
CFGA800-Cu-50			50/box
CFGA1000-Cu-25	1000 micron	standard	25/box
CFGA1000-Cu-50			50/box
CFGA1500-Cu-25	1500 micron	standard	25/box
CFGA1500-Cu-50			50/box

Cat. #	Type	Thickness	Qty
CFGA75-Ni-25	75 micron	standard	25/box
CFGA75-Ni-50			50/box
CFGA100-Ni-25	100 micron	standard	25/box
CFGA100-Ni-50			50/box
CFGA150-Ni-25	150 micron	standard	25/box
CFGA150-Ni-50			50/box
CFGA200-Ni-25	200 micron	standard	25/box
CFGA200-Ni-50			50/box
CFGA300-Ni-25	300 micron	standard	25/box
CFGA300-Ni-50			50/box
CFGA400-Ni-25	400 micron	standard	25/box
CFGA400-Ni-50			50/box
CFGA600-Ni-25	600 micron	standard	25/box
CFGA600-Ni-50			50/box
CFGA800-Ni-25	800 micron	standard	25/box
CFGA800-Ni-50			50/box
CFGA1000-Ni-25	1000 micron	standard	25/box
CFGA1000-Ni-50			50/box
CFGA1500-Ni-25	1500 micron	standard	25/box
CFGA1500-Ni-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
CFGA75-Cu-UL	75 micron	ultra-thin	50/box
CFGA75-Cu-TH		thick	50/box
CFGA75-Cu-ET		extra thick	50/box
CFGA100-Cu-UL	100 micron	ultra-thin	50/box
CFGA100-Cu-TH		thick	50/box
CFGA100-Cu-ET		extra thick	50/box
CFGA150-Cu-UL	150 micron	ultra-thin	50/box
CFGA150-Cu-TH		thick	50/box
CFGA150-Cu-ET		extra thick	50/box
CFGA200-Cu-UL	200 micron	ultra-thin	50/box
CFGA200-Cu-TH		thick	50/box
CFGA200-Cu-ET		extra thick	50/box
CFGA300-Cu-UL	300 micron	ultra-thin	50/box
CFGA300-Cu-TH		thick	50/box
CFGA300-Cu-ET		extra thick	50/box
CFGA400-Cu-UL	400 micron	ultra-thin	50/box
CFGA400-Cu-TH		thick	50/box
CFGA400-Cu-ET		extra thick	50/box
CFGA600-Cu-UL	600 micron	ultra-thin	50/box
CFGA600-Cu-TH		thick	50/box
CFGA600-Cu-ET		extra thick	50/box
CFGA800-Cu-UL	800 micron	ultra-thin	50/box
CFGA800-Cu-TH		thick	50/box
CFGA800-Cu-ET		extra thick	50/box
CFGA1000-Cu-UL	1000 micron	ultra-thin	50/box
CFGA1000-Cu-TH		thick	50/box
CFGA1000-Cu-ET		extra thick	50/box
CFGA1500-Cu-UL	1500 micron	ultra-thin	50/box
CFGA1500-Cu-TH		thick	50/box
CFGA1500-Cu-ET		extra thick	50/box

Cat. #	Type	Thickness	Qty
CFGA75-Ni-UL	75 micron	ultra-thin	50/box
CFGA75-Ni-TH		thick	50/box
CFGA75-Ni-ET		extra thick	50/box
CFGA100-Ni-UL	100 micron	ultra-thin	50/box
CFGA100-Ni-TH		thick	50/box
CFGA100-Ni-ET		extra thick	50/box
CFGA150-Ni-UL	150 micron	ultra-thin	50/box
CFGA150-Ni-TH		thick	50/box
CFGA150-Ni-ET		extra thick	50/box
CFGA200-Ni-UL	200 micron	ultra-thin	50/box
CFGA200-Ni-TH		thick	50/box
CFGA200-Ni-ET		extra thick	50/box
CFGA300-Ni-UL	300 micron	ultra-thin	50/box
CFGA300-Ni-TH		thick	50/box
CFGA300-Ni-ET		extra thick	50/box
CFGA400-Ni-UL	400 micron	ultra-thin	50/box
CFGA400-Ni-TH		thick	50/box
CFGA400-Ni-ET		extra thick	50/box
CFGA600-Ni-UL	600 micron	ultra-thin	50/box
CFGA600-Ni-TH		thick	50/box
CFGA600-Ni-ET		extra thick	50/box
CFGA800-Ni-UL	800 micron	ultra-thin	50/box
CFGA800-Ni-TH		thick	50/box
CFGA800-Ni-ET		extra thick	50/box
CFGA1000-Ni-UL	1000 micron	ultra-thin	50/box
CFGA1000-Ni-TH		thick	50/box
CFGA1000-Ni-ET		extra thick	50/box
CFGA1500-Ni-UL	1500 micron	ultra-thin	50/box
CFGA1500-Ni-TH		thick	50/box
CFGA1500-Ni-ET		extra thick	50/box

TECHNICAL TIP

A Simple Method for Handling Grids

A simplified method for handling EM grids is described. This new method not only offers safety and identification of your samples but offers you improved handling, temporary storage, and identification of grids bearing ultrathin sections as well as a novel method for preparing bulk samples.

Gorycki, M.(1992). A Simple Method for Handling Grids. Biotechnic & Histochemistry 67/5, 313-314.

3. Formvar/Carbon Film

A formvar coated grid, stabilized with evaporated carbon film. This type of coating is excellent for specimen support, especially for ultra thin sections. The thickness range is as follows:

Standard Option A: 10nm Formvar and 1nm Carbon

Standard Option B (SB): 10nm Formvar and 3-4nm Carbon

Standard Option C (SC): 10nm Formvar and 20-30nm Carbon

Ultra-Thin Option A (UA): 5-6nm Formvar and 1nm Carbon

Ultra-Thin Option B (UB): 5-6nm Formvar and 3-4nm Carbon

Ultra-Thin Option C (UC): 5-6nm Formvar and 20-30nm Carbon

Thick Option A (TA): 15-20nm Formvar and 1nm Carbon

Thick Option B (TB): 15-20nm Formvar and 3-4nm Carbon

Thick Option C (TC): 15-20nm Formvar and 20-30nm Carbon

Extra Thick Option A (EA): 25-50nm Formvar and 1nm Carbon

Extra Thick Option B (EB): 25-50nm Formvar and 3-4nm Carbon

Extra Thick Option C (EC): 25-50nm Formvar and 20-30nm Carbon

III Formvar/Carbon Square Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCF100-Cu-25	100 MESH	standard 'A'	25/box
FCF100-Cu-50			50/box
FCF150-Cu-25	150 MESH	standard 'A'	25/box
FCF150-Cu-50			50/box
FCF200-Cu-25	200 MESH	standard 'A'	25/box
FCF200-Cu-50			50/box
FCF300-Cu-25	300 MESH	standard 'A'	25/box
FCF300-Cu-50			50/box
FCF400-Cu-25	400 MESH	standard 'A'	25/box
FCF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCF100-Ni-25	100 MESH	standard 'A'	25/box
FCF100-Ni-50			50/box
FCF150-Ni-25	150 MESH	standard 'A'	25/box
FCF150-Ni-50			50/box
FCF200-Ni-25	200 MESH	standard 'A'	25/box
FCF200-Ni-50			50/box
FCF300-Ni-25	300 MESH	standard 'A'	25/box
FCF300-Ni-50			50/box
FCF400-Ni-25	400 MESH	standard 'A'	25/box
FCF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCF100-Au-25	100 MESH	standard 'A'	25/box
FCF100-Au-50			50/box
FCF150-Au-25	150 MESH	standard 'A'	25/box
FCF150-Au-50			50/box
FCF200-Au-25	200 MESH	standard 'A'	25/box
FCF200-Au-50			50/box
FCF300-Au-25	300 MESH	standard 'A'	25/box
FCF300-Au-50			50/box
FCF400-Au-25	400 MESH	standard 'A'	25/box
FCF400-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCF100-Cu-SB	100 MESH	standard 'B'	50/box
FCF100-Cu-SC		standard 'C'	50/box
FCF100-Cu-UA		ultra-thin 'A'	50/box
FCF100-Cu-UB		ultra-thin 'B'	50/box
FCF100-Cu-UC		ultra-thin 'C'	50/box
FCF100-Cu-TA		thick 'A'	50/box
FCF100-Cu-TB		thick 'B'	50/box
FCF100-Cu-TC		thick 'C'	50/box
FCF100-Cu-EA		extra thick 'A'	50/box
FCF100-Cu-EB		extra thick 'B'	50/box
FCF100-Cu-EC		extra thick 'C'	50/box
FCF150-Cu-SB	150 MESH	standard 'B'	50/box
FCF150-Cu-SC		standard 'C'	50/box
FCF150-Cu-UA		ultra-thin 'A'	50/box
FCF150-Cu-UB		ultra-thin 'B'	50/box
FCF150-Cu-UC		ultra-thin 'C'	50/box
FCF150-Cu-TA		thick 'A'	50/box
FCF150-Cu-TB		thick 'B'	50/box
FCF150-Cu-TC		thick 'C'	50/box
FCF150-Cu-EA		extra thick 'A'	50/box
FCF150-Cu-EB		extra thick 'B'	50/box
FCF150-Cu-EC		extra thick 'C'	50/box
FCF200-Cu-SB	200 MESH	standard 'B'	50/box
FCF200-Cu-SC		standard 'C'	50/box
FCF200-Cu-UA		ultra-thin 'A'	50/box
FCF200-Cu-UB		ultra-thin 'B'	50/box
FCF200-Cu-UC		ultra-thin 'C'	50/box
FCF200-Cu-TA		thick 'A'	50/box
FCF200-Cu-TB		thick 'B'	50/box
FCF200-Cu-TC		thick 'C'	50/box
FCF200-Cu-EA		extra thick 'A'	50/box
FCF200-Cu-EB		extra thick 'B'	50/box
FCF200-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF100-Ni-SB	100 MESH	standard 'B'	50/box
FCF100-Ni-SC		standard 'C'	50/box
FCF100-Ni-UA		ultra-thin 'A'	50/box
FCF100-Ni-UB		ultra-thin 'B'	50/box
FCF100-Ni-UC		ultra-thin 'C'	50/box
FCF100-Ni-TA		thick 'A'	50/box
FCF100-Ni-TB		thick 'B'	50/box
FCF100-Ni-TC		thick 'C'	50/box
FCF100-Ni-EA		extra thick 'A'	50/box
FCF100-Ni-EB		extra thick 'B'	50/box
FCF100-Ni-EC		extra thick 'C'	50/box
FCF150-Ni-SB	150 MESH	standard 'B'	50/box
FCF150-Ni-SC		standard 'C'	50/box
FCF150-Ni-UA		ultra-thin 'A'	50/box
FCF150-Ni-UB		ultra-thin 'B'	50/box
FCF150-Ni-UC		ultra-thin 'C'	50/box
FCF150-Ni-TA		thick 'A'	50/box
FCF150-Ni-TB		thick 'B'	50/box
FCF150-Ni-TC		thick 'C'	50/box
FCF150-Ni-EA		extra thick 'A'	50/box
FCF150-Ni-EB		extra thick 'B'	50/box
FCF150-Ni-EC		extra thick 'C'	50/box
FCF200-Ni-SB	200 MESH	standard 'B'	50/box
FCF200-Ni-SC		standard 'C'	50/box
FCF200-Ni-UA		ultra-thin 'A'	50/box
FCF200-Ni-UB		ultra-thin 'B'	50/box
FCF200-Ni-UC		ultra-thin 'C'	50/box
FCF200-Ni-TA		thick 'A'	50/box
FCF200-Ni-TB		thick 'B'	50/box
FCF200-Ni-TC		thick 'C'	50/box
FCF200-Ni-EA		extra thick 'A'	50/box
FCF200-Ni-EB		extra thick 'B'	50/box
FCF200-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF100-Au-SB	100 MESH	standard 'B'	50/box
FCF100-Au-SC		standard 'C'	50/box
FCF100-Au-UA		ultra-thin 'A'	50/box
FCF100-Au-UB		ultra-thin 'B'	50/box
FCF100-Au-UC		ultra-thin 'C'	50/box
FCF100-Au-TA		thick 'A'	50/box
FCF100-Au-TB		thick 'B'	50/box
FCF100-Au-TC		thick 'C'	50/box
FCF100-Au-EA		extra thick 'A'	50/box
FCF100-Au-EB		extra thick 'B'	50/box
FCF100-Au-EC		extra thick 'C'	50/box
FCF150-Au-SB	150 MESH	standard 'B'	50/box
FCF150-Au-SC		standard 'C'	50/box
FCF150-Au-UA		ultra-thin 'A'	50/box
FCF150-Au-UB		ultra-thin 'B'	50/box
FCF150-Au-UC		ultra-thin 'C'	50/box
FCF150-Au-TA		thick 'A'	50/box
FCF150-Au-TB		thick 'B'	50/box
FCF150-Au-TC		thick 'C'	50/box
FCF150-Au-EA		extra thick 'A'	50/box
FCF150-Au-EB		extra thick 'B'	50/box
FCF150-Au-EC		extra thick 'C'	50/box
FCF200-Au-SB	200 MESH	standard 'B'	50/box
FCF200-Au-SC		standard 'C'	50/box
FCF200-Au-UA		ultra-thin 'A'	50/box
FCF200-Au-UB		ultra-thin 'B'	50/box
FCF200-Au-UC		ultra-thin 'C'	50/box
FCF200-Au-TA		thick 'A'	50/box
FCF200-Au-TB		thick 'B'	50/box
FCF200-Au-TC		thick 'C'	50/box
FCF200-Au-EA		extra thick 'A'	50/box
FCF200-Au-EB		extra thick 'B'	50/box
FCF200-Au-EC		extra thick 'C'	50/box

continues »»»

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Formvar/Carbon Square Mesh (continued)

COPPER NICKEL GOLD

NEW Thickness Ranges (continued)

Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty
FCF300-Cu-SB	300 MESH	standard 'B'	50/box	FCF300-Ni-SB	300 MESH	standard 'B'	50/box	FCF300-Au-SB	300 MESH	standard 'B'	50/box
FCF300-Cu-SC		standard 'C'	50/box	FCF300-Ni-SC		standard 'C'	50/box	FCF300-Au-SC		standard 'C'	50/box
FCF300-Cu-UA		ultra-thin 'A'	50/box	FCF300-Ni-UA		ultra-thin 'A'	50/box	FCF300-Au-UA		ultra-thin 'A'	50/box
FCF300-Cu-UB		ultra-thin 'B'	50/box	FCF300-Ni-UB		ultra-thin 'B'	50/box	FCF300-Au-UB		ultra-thin 'B'	50/box
FCF300-Cu-UC		ultra-thin 'C'	50/box	FCF300-Ni-UC		ultra-thin 'C'	50/box	FCF300-Au-UC		ultra-thin 'C'	50/box
FCF300-Cu-TA		thick 'A'	50/box	FCF300-Ni-TA		thick 'A'	50/box	FCF300-Au-TA		thick 'A'	50/box
FCF300-Cu-TB		thick 'B'	50/box	FCF300-Ni-TB		thick 'B'	50/box	FCF300-Au-TB		thick 'B'	50/box
FCF300-Cu-TC		thick 'C'	50/box	FCF300-Ni-TC		thick 'C'	50/box	FCF300-Au-TC		thick 'C'	50/box
FCF300-Cu-EA		extra thick 'A'	50/box	FCF300-Ni-EA		extra thick 'A'	50/box	FCF300-Au-EA		extra thick 'A'	50/box
FCF300-Cu-EB		extra thick 'B'	50/box	FCF300-Ni-EB		extra thick 'B'	50/box	FCF300-Au-EB		extra thick 'B'	50/box
FCF300-Cu-EC		extra thick 'C'	50/box	FCF300-Ni-EC		extra thick 'C'	50/box	FCF300-Au-EC		extra thick 'C'	50/box
FCF400-Cu-SB	400 MESH	standard 'B'	50/box	FCF400-Ni-SB	400 MESH	standard 'B'	50/box	FCF400-Au-SB	400 MESH	standard 'B'	50/box
FCF400-Cu-SC		standard 'C'	50/box	FCF400-Ni-SC		standard 'C'	50/box	FCF400-Au-SC		standard 'C'	50/box
FCF400-Cu-UA		ultra-thin 'A'	50/box	FCF400-Ni-UA		ultra-thin 'A'	50/box	FCF400-Au-UA		ultra-thin 'A'	50/box
FCF400-Cu-UB		ultra-thin 'B'	50/box	FCF400-Ni-UB		ultra-thin 'B'	50/box	FCF400-Au-UB		ultra-thin 'B'	50/box
FCF400-Cu-UC		ultra-thin 'C'	50/box	FCF400-Ni-UC		ultra-thin 'C'	50/box	FCF400-Au-UC		ultra-thin 'C'	50/box
FCF400-Cu-TA		thick 'A'	50/box	FCF400-Ni-TA		thick 'A'	50/box	FCF400-Au-TA		thick 'A'	50/box
FCF400-Cu-TB		thick 'B'	50/box	FCF400-Ni-TB		thick 'B'	50/box	FCF400-Au-TB		thick 'B'	50/box
FCF400-Cu-TC		thick 'C'	50/box	FCF400-Ni-TC		thick 'C'	50/box	FCF400-Au-TC		thick 'C'	50/box
FCF400-Cu-EA		extra thick 'A'	50/box	FCF400-Ni-EA		extra thick 'A'	50/box	FCF400-Au-EA		extra thick 'A'	50/box
FCF400-Cu-EB		extra thick 'B'	50/box	FCF400-Ni-EB		extra thick 'B'	50/box	FCF400-Au-EB		extra thick 'B'	50/box
FCF400-Cu-EC		extra thick 'C'	50/box	FCF400-Ni-EC		extra thick 'C'	50/box	FCF400-Au-EC		extra thick 'C'	50/box

Formvar/Carbon Gilder Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty
FCF200F1-Cu-25	F1	standard 'A'	25/box	FCF200F1-Ni-25	F1	standard 'A'	25/box	FCF200F1-Au-25	F1	standard 'A'	25/box
FCF200F1-Cu-50			50/box	FCF200F1-Ni-50			50/box	FCF200F1-Au-50			50/box
FCF200F2-Cu-25	F2	standard 'A'	25/box	FCF200F2-Ni-25	F2	standard 'A'	25/box	FCF200F2-Au-25	F2	standard 'A'	25/box
FCF200F2-Cu-50			50/box	FCF200F2-Ni-50			50/box	FCF200F2-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty
FCF200F1-Cu-SB	F1	standard 'B'	50/box	FCF200F1-Ni-SB	F1	standard 'B'	50/box	FCF200F1-Au-SB	F1	standard 'B'	50/box
FCF200F1-Cu-SC		standard 'C'	50/box	FCF200F1-Ni-SC		standard 'C'	50/box	FCF200F1-Au-SC		standard 'C'	50/box
FCF200F1-Cu-UA		ultra-thin 'A'	50/box	FCF200F1-Ni-UA		ultra-thin 'A'	50/box	FCF200F1-Au-UA		ultra-thin 'A'	50/box
FCF200F1-Cu-UB		ultra-thin 'B'	50/box	FCF200F1-Ni-UB		ultra-thin 'B'	50/box	FCF200F1-Au-UB		ultra-thin 'B'	50/box
FCF200F1-Cu-UC		ultra-thin 'C'	50/box	FCF200F1-Ni-UC		ultra-thin 'C'	50/box	FCF200F1-Au-UC		ultra-thin 'C'	50/box
FCF200F1-Cu-TA		thick 'A'	50/box	FCF200F1-Ni-TA		thick 'A'	50/box	FCF200F1-Au-TA		thick 'A'	50/box
FCF200F1-Cu-TB		thick 'B'	50/box	FCF200F1-Ni-TB		thick 'B'	50/box	FCF200F1-Au-TB		thick 'B'	50/box
FCF200F1-Cu-TC		thick 'C'	50/box	FCF200F1-Ni-TC		thick 'C'	50/box	FCF200F1-Au-TC		thick 'C'	50/box
FCF200F1-Cu-EA		extra thick 'A'	50/box	FCF200F1-Ni-EA		extra thick 'A'	50/box	FCF200F1-Au-EA		extra thick 'A'	50/box
FCF200F1-Cu-EB		extra thick 'B'	50/box	FCF200F1-Ni-EB		extra thick 'B'	50/box	FCF200F1-Au-EB		extra thick 'B'	50/box
FCF200F1-Cu-EC		extra thick 'C'	50/box	FCF200F1-Ni-EC		extra thick 'C'	50/box	FCF200F1-Au-EC		extra thick 'C'	50/box
FCF200F2-Cu-SB	F2	standard 'B'	50/box	FCF200F2-Ni-SB	F2	standard 'B'	50/box	FCF200F2-Au-SB	F2	standard 'B'	50/box
FCF200F2-Cu-SC		standard 'C'	50/box	FCF200F2-Ni-SC		standard 'C'	50/box	FCF200F2-Au-SC		standard 'C'	50/box
FCF200F2-Cu-UA		ultra-thin 'A'	50/box	FCF200F2-Ni-UA		ultra-thin 'A'	50/box	FCF200F2-Au-UA		ultra-thin 'A'	50/box
FCF200F2-Cu-UB		ultra-thin 'B'	50/box	FCF200F2-Ni-UB		ultra-thin 'B'	50/box	FCF200F2-Au-UB		ultra-thin 'B'	50/box
FCF200F2-Cu-UC		ultra-thin 'C'	50/box	FCF200F2-Ni-UC		ultra-thin 'C'	50/box	FCF200F2-Au-UC		ultra-thin 'C'	50/box
FCF200F2-Cu-TA		thick 'A'	50/box	FCF200F2-Ni-TA		thick 'A'	50/box	FCF200F2-Au-TA		thick 'A'	50/box
FCF200F2-Cu-TB		thick 'B'	50/box	FCF200F2-Ni-TB		thick 'B'	50/box	FCF200F2-Au-TB		thick 'B'	50/box
FCF200F2-Cu-TC		thick 'C'	50/box	FCF200F2-Ni-TC		thick 'C'	50/box	FCF200F2-Au-TC		thick 'C'	50/box
FCF200F2-Cu-EA		extra thick 'A'	50/box	FCF200F2-Ni-EA		extra thick 'A'	50/box	FCF200F2-Au-EA		extra thick 'A'	50/box
FCF200F2-Cu-EB		extra thick 'B'	50/box	FCF200F2-Ni-EB		extra thick 'B'	50/box	FCF200F2-Au-EB		extra thick 'B'	50/box
FCF200F2-Cu-EC		extra thick 'C'	50/box	FCF200F2-Ni-EC		extra thick 'C'	50/box	FCF200F2-Au-EC		extra thick 'C'	50/box

SUPPORT FILM ON GRIDS

Guide to Thickness Ranges

Standard Option A: 10nm Formvar and 1nm Carbon
Standard Option B (SB): 10nm Formvar and 3-4nm Carbon
Standard Option C (SC): 10nm Formvar and 20-30nm Carbon
Ultra-Thin Option A (UA): 5-6nm Formvar and 1nm Carbon
Ultra-Thin Option B (UB): 5-6nm Formvar and 3-4nm Carbon
Ultra-Thin Option C (UC): 5-6nm Formvar and 20-30nm Carbon

Thick Option A (TA): 15-20nm Formvar and 1nm Carbon
Thick Option B (TB): 15-20nm Formvar and 3-4nm Carbon
Thick Option C (TC): 15-20nm Formvar and 20-30nm Carbon
Extra Thick Option A (EA): 25-50nm Formvar and 1nm Carbon
Extra Thick Option B (EB): 25-50nm Formvar and 3-4nm Carbon
Extra Thick Option C (EC): 25-50nm Formvar and 20-30nm Carbon

III Formvar/Carbon London Finder Grids

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCFLF135-Cu-25	LF135	standard 'A'	25/box
FCFLF135-Cu-50			50/box
FCFLF200-Cu-25	LF200	standard 'A'	25/box
FCFLF200-Cu-50			50/box
FCFLF400-Cu-25	LF400	standard 'A'	25/box
FCFLF400-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCFLF135-Ni-25	LF135	standard 'A'	25/box
FCFLF135-Ni-50			50/box
FCFLF200-Ni-25	LF200	standard 'A'	25/box
FCFLF200-Ni-50			50/box
FCFLF400-Ni-25	LF400	standard 'A'	25/box
FCFLF400-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCFLF135-Au-25	LF135	standard 'A'	25/box
FCFLF135-Au-50			50/box
FCFLF200-Au-25	LF200	standard 'A'	25/box
FCFLF400-Au-25	LF400	standard 'A'	25/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCFLF135-Cu-SB	LF135	standard 'B'	50/box
FCFLF135-Cu-SC		standard 'C'	50/box
FCFLF135-Cu-UA		ultra-thin 'A'	50/box
FCFLF135-Cu-UB		ultra-thin 'B'	50/box
FCFLF135-Cu-UC		ultra-thin 'C'	50/box
FCFLF135-Cu-TA		thick 'A'	50/box
FCFLF135-Cu-TB		thick 'B'	50/box
FCFLF135-Cu-TC		thick 'C'	50/box
FCFLF135-Cu-EA		extra thick 'A'	50/box
FCFLF135-Cu-EB		extra thick 'B'	50/box
FCFLF135-Cu-EC		extra thick 'C'	50/box
FCFLF200-Cu-SB	LF200	standard 'B'	50/box
FCFLF200-Cu-SC		standard 'C'	50/box
FCFLF200-Cu-UA		ultra-thin 'A'	50/box
FCFLF200-Cu-UB		ultra-thin 'B'	50/box
FCFLF200-Cu-UC		ultra-thin 'C'	50/box
FCFLF200-Cu-TA		thick 'A'	50/box
FCFLF200-Cu-TB		thick 'B'	50/box
FCFLF200-Cu-TC		thick 'C'	50/box
FCFLF200-Cu-EA		extra thick 'A'	50/box
FCFLF200-Cu-EB		extra thick 'B'	50/box
FCFLF200-Cu-EC		extra thick 'C'	50/box
FCFLF400-Cu-SB	LF400	standard 'B'	50/box
FCFLF400-Cu-SC		standard 'C'	50/box
FCFLF400-Cu-UA		ultra-thin 'A'	50/box
FCFLF400-Cu-UB		ultra-thin 'B'	50/box
FCFLF400-Cu-UC		ultra-thin 'C'	50/box
FCFLF400-Cu-TA		thick 'A'	50/box
FCFLF400-Cu-TB		thick 'B'	50/box
FCFLF400-Cu-TC		thick 'C'	50/box
FCFLF400-Cu-EA		extra thick 'A'	50/box
FCFLF400-Cu-EB		extra thick 'B'	50/box
FCFLF400-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFLF135-Ni-SB	LF135	standard 'B'	50/box
FCFLF135-Ni-SC		standard 'C'	50/box
FCFLF135-Ni-UA		ultra-thin 'A'	50/box
FCFLF135-Ni-UB		ultra-thin 'B'	50/box
FCFLF135-Ni-UC		ultra-thin 'C'	50/box
FCFLF135-Ni-TA		thick 'A'	50/box
FCFLF135-Ni-TB		thick 'B'	50/box
FCFLF135-Ni-TC		thick 'C'	50/box
FCFLF135-Ni-EA		extra thick 'A'	50/box
FCFLF135-Ni-EB		extra thick 'B'	50/box
FCFLF135-Ni-EC		extra thick 'C'	50/box
FCFLF200-Ni-SB	LF200	standard 'B'	50/box
FCFLF200-Ni-SC		standard 'C'	50/box
FCFLF200-Ni-UA		ultra-thin 'A'	50/box
FCFLF200-Ni-UB		ultra-thin 'B'	50/box
FCFLF200-Ni-UC		ultra-thin 'C'	50/box
FCFLF200-Ni-TA		thick 'A'	50/box
FCFLF200-Ni-TB		thick 'B'	50/box
FCFLF200-Ni-TC		thick 'C'	50/box
FCFLF200-Ni-EA		extra thick 'A'	50/box
FCFLF200-Ni-EB		extra thick 'B'	50/box
FCFLF200-Ni-EC		extra thick 'C'	50/box
FCFLF400-Ni-SB	LF400	standard 'B'	50/box
FCFLF400-Ni-SC		standard 'C'	50/box
FCFLF400-Ni-UA		ultra-thin 'A'	50/box
FCFLF400-Ni-UB		ultra-thin 'B'	50/box
FCFLF400-Ni-UC		ultra-thin 'C'	50/box
FCFLF400-Ni-TA		thick 'A'	50/box
FCFLF400-Ni-TB		thick 'B'	50/box
FCFLF400-Ni-TC		thick 'C'	50/box
FCFLF400-Ni-EA		extra thick 'A'	50/box
FCFLF400-Ni-EB		extra thick 'B'	50/box
FCFLF400-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFLF135-Au-SB	LF135	standard 'B'	50/box
FCFLF135-Au-SC		standard 'C'	50/box
FCFLF135-Au-UA		ultra-thin 'A'	50/box
FCFLF135-Au-UB		ultra-thin 'B'	50/box
FCFLF135-Au-UC		ultra-thin 'C'	50/box
FCFLF135-Au-TA		thick 'A'	50/box
FCFLF135-Au-TB		thick 'B'	50/box
FCFLF135-Au-TC		thick 'C'	50/box
FCFLF135-Au-EA		extra thick 'A'	50/box
FCFLF135-Au-EB		extra thick 'B'	50/box
FCFLF135-Au-EC		extra thick 'C'	50/box

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III Formvar/Carbon Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCF100H-Cu-25	100 MESH	standard 'A'	25/box
FCF100H-Cu-50			50/box
FCF200H-Cu-25	200 MESH	standard 'A'	25/box
FCF200H-Cu-50			50/box
FCF300H-Cu-25	300 MESH	standard 'A'	25/box
FCF300H-Cu-50			50/box
FCF400H-Cu-25	400 MESH	standard 'A'	25/box
FCF400H-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCF100H-Ni-25	100 MESH	standard 'A'	25/box
FCF100H-Ni-50			50/box
FCF200H-Ni-25	200 MESH	standard 'A'	25/box
FCF200H-Ni-50			50/box
FCF300H-Ni-25	300 MESH	standard 'A'	25/box
FCF300H-Ni-50			50/box
FCF400H-Ni-25	400 MESH	standard 'A'	25/box
FCF400H-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCF100H-Au-25	100 MESH	standard 'A'	25/box
FCF100H-Au-50			50/box
FCF200H-Au-25	200 MESH	standard 'A'	25/box
FCF200H-Au-50			50/box
FCF300H-Au-25	300 MESH	standard 'A'	25/box
FCF300H-Au-50			50/box
FCF400H-Au-25	400 MESH	standard 'A'	25/box
FCF400H-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCF100H-Cu-SB	100 MESH	standard 'B'	50/box
FCF100H-Cu-SC		standard 'C'	50/box
FCF100H-Cu-UA		ultra-thin 'A'	50/box
FCF100H-Cu-UB		ultra-thin 'B'	50/box
FCF100H-Cu-UC		ultra-thin 'C'	50/box
FCF100H-Cu-TA		thick 'A'	50/box
FCF100H-Cu-TB		thick 'B'	50/box
FCF100H-Cu-TC		thick 'C'	50/box
FCF100H-Cu-EA		extra thick 'A'	50/box
FCF100H-Cu-EB		extra thick 'B'	50/box
FCF100H-Cu-EC		extra thick 'C'	50/box
FCF200H-Cu-SB	200 MESH	standard 'B'	50/box
FCF200H-Cu-SC		standard 'C'	50/box
FCF200H-Cu-UA		ultra-thin 'A'	50/box
FCF200H-Cu-UB		ultra-thin 'B'	50/box
FCF200H-Cu-UC		ultra-thin 'C'	50/box
FCF200H-Cu-TA		thick 'A'	50/box
FCF200H-Cu-TB		thick 'B'	50/box
FCF200H-Cu-TC		thick 'C'	50/box
FCF200H-Cu-EA		extra thick 'A'	50/box
FCF200H-Cu-EB		extra thick 'B'	50/box
FCF200H-Cu-EC		extra thick 'C'	50/box
FCF300H-Cu-SB	300 MESH	standard 'B'	50/box
FCF300H-Cu-SC		standard 'C'	50/box
FCF300H-Cu-UA		ultra-thin 'A'	50/box
FCF300H-Cu-UB		ultra-thin 'B'	50/box
FCF300H-Cu-UC		ultra-thin 'C'	50/box
FCF300H-Cu-TA		thick 'A'	50/box
FCF300H-Cu-TB		thick 'B'	50/box
FCF300H-Cu-TC		thick 'C'	50/box
FCF300H-Cu-EA		extra thick 'A'	50/box
FCF300H-Cu-EB		extra thick 'B'	50/box
FCF300H-Cu-EC		extra thick 'C'	50/box
FCF400H-Cu-SB	400 MESH	standard 'B'	50/box
FCF400H-Cu-SC		standard 'C'	50/box
FCF400H-Cu-UA		ultra-thin 'A'	50/box
FCF400H-Cu-UB		ultra-thin 'B'	50/box
FCF400H-Cu-UC		ultra-thin 'C'	50/box
FCF400H-Cu-TA		thick 'A'	50/box
FCF400H-Cu-TB		thick 'B'	50/box
FCF400H-Cu-TC		thick 'C'	50/box
FCF400H-Cu-EA		extra thick 'A'	50/box
FCF400H-Cu-EB		extra thick 'B'	50/box
FCF400H-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF100H-Ni-SB	100 MESH	standard 'B'	50/box
FCF100H-Ni-SC		standard 'C'	50/box
FCF100H-Ni-UA		ultra-thin 'A'	50/box
FCF100H-Ni-UB		ultra-thin 'B'	50/box
FCF100H-Ni-UC		ultra-thin 'C'	50/box
FCF100H-Ni-TA		thick 'A'	50/box
FCF100H-Ni-TB		thick 'B'	50/box
FCF100H-Ni-TC		thick 'C'	50/box
FCF100H-Ni-EA		extra thick 'A'	50/box
FCF100H-Ni-EB		extra thick 'B'	50/box
FCF100H-Ni-EC		extra thick 'C'	50/box
FCF200H-Ni-SB	200 MESH	standard 'B'	50/box
FCF200H-Ni-SC		standard 'C'	50/box
FCF200H-Ni-UA		ultra-thin 'A'	50/box
FCF200H-Ni-UB		ultra-thin 'B'	50/box
FCF200H-Ni-UC		ultra-thin 'C'	50/box
FCF200H-Ni-TA		thick 'A'	50/box
FCF200H-Ni-TB		thick 'B'	50/box
FCF200H-Ni-TC		thick 'C'	50/box
FCF200H-Ni-EA		extra thick 'A'	50/box
FCF200H-Ni-EB		extra thick 'B'	50/box
FCF200H-Ni-EC		extra thick 'C'	50/box
FCF300H-Ni-SB	300 MESH	standard 'B'	50/box
FCF300H-Ni-SC		standard 'C'	50/box
FCF300H-Ni-UA		ultra-thin 'A'	50/box
FCF300H-Ni-UB		ultra-thin 'B'	50/box
FCF300H-Ni-UC		ultra-thin 'C'	50/box
FCF300H-Ni-TA		thick 'A'	50/box
FCF300H-Ni-TB		thick 'B'	50/box
FCF300H-Ni-TC		thick 'C'	50/box
FCF300H-Ni-EA		extra thick 'A'	50/box
FCF300H-Ni-EB		extra thick 'B'	50/box
FCF300H-Ni-EC		extra thick 'C'	50/box
FCF400H-Ni-SB	300 MESH	standard 'B'	50/box
FCF400H-Ni-SC		standard 'C'	50/box
FCF400H-Ni-UA		ultra-thin 'A'	50/box
FCF400H-Ni-UB		ultra-thin 'B'	50/box
FCF400H-Ni-UC		ultra-thin 'C'	50/box
FCF400H-Ni-TA		thick 'A'	50/box
FCF400H-Ni-TB		thick 'B'	50/box
FCF400H-Ni-TC		thick 'C'	50/box
FCF400H-Ni-EA		extra thick 'A'	50/box
FCF400H-Ni-EB		extra thick 'B'	50/box
FCF400H-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF100H-Au-SB	100 MESH	standard 'B'	50/box
FCF100H-Au-SC		standard 'C'	50/box
FCF100H-Au-UA		ultra-thin 'A'	50/box
FCF100H-Au-UB		ultra-thin 'B'	50/box
FCF100H-Au-UC		ultra-thin 'C'	50/box
FCF100H-Au-TA		thick 'A'	50/box
FCF100H-Au-TB		thick 'B'	50/box
FCF100H-Au-TC		thick 'C'	50/box
FCF100H-Au-EA		extra thick 'A'	50/box
FCF100H-Au-EB		extra thick 'B'	50/box
FCF100H-Au-EC		extra thick 'C'	50/box
FCF200H-Au-SB	200 MESH	standard 'B'	50/box
FCF200H-Au-SC		standard 'C'	50/box
FCF200H-Au-UA		ultra-thin 'A'	50/box
FCF200H-Au-UB		ultra-thin 'B'	50/box
FCF200H-Au-UC		ultra-thin 'C'	50/box
FCF200H-Au-TA		thick 'A'	50/box
FCF200H-Au-TB		thick 'B'	50/box
FCF200H-Au-TC		thick 'C'	50/box
FCF200H-Au-EA		extra thick 'A'	50/box
FCF200H-Au-EB		extra thick 'B'	50/box
FCF200H-Au-EC		extra thick 'C'	50/box
FCF300H-Au-SB	300 MESH	standard 'B'	50/box
FCF300H-Au-SC		standard 'C'	50/box
FCF300H-Au-UA		ultra-thin 'A'	50/box
FCF300H-Au-UB		ultra-thin 'B'	50/box
FCF300H-Au-UC		ultra-thin 'C'	50/box
FCF300H-Au-TA		thick 'A'	50/box
FCF300H-Au-TB		thick 'B'	50/box
FCF300H-Au-TC		thick 'C'	50/box
FCF300H-Au-EA		extra thick 'A'	50/box
FCF300H-Au-EB		extra thick 'B'	50/box
FCF300H-Au-EC		extra thick 'C'	50/box
FCF400H-Au-SB	400 MESH	standard 'B'	50/box
FCF400H-Au-SC		standard 'C'	50/box
FCF400H-Au-UA		ultra-thin 'A'	50/box
FCF400H-Au-UB		ultra-thin 'B'	50/box
FCF400H-Au-UC		ultra-thin 'C'	50/box
FCF400H-Au-TA		thick 'A'	50/box
FCF400H-Au-TB		thick 'B'	50/box
FCF400H-Au-TC		thick 'C'	50/box
FCF400H-Au-EA		extra thick 'A'	50/box
FCF400H-Au-EB		extra thick 'B'	50/box
FCF400H-Au-EC		extra thick 'C'	50/box

SUPPORT FILM ON GRIDS

III Formvar/Carbon Thin Bar Square Mesh

COPPER | NICKEL | GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCFT200-Cu-25	200 MESH	standard 'A'	25/box
FCFT200-Cu-50			50/box
FCFT300-Cu-25	300 MESH	standard 'A'	25/box
FCFT300-Cu-50			50/box
FCFT400-Cu-25	400 MESH	standard 'A'	25/box
FCFT400-Cu-50			50/box
FCFT1000-Cu-25	1000 MESH	standard 'A'	25/box
FCFT1000-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCFT200-Ni-25	200 MESH	standard 'A'	25/box
FCFT200-Ni-50			50/box
FCFT300-Ni-25	300 MESH	standard 'A'	25/box
FCFT300-Ni-50			50/box
FCFT400-Ni-25	400 MESH	standard 'A'	25/box
FCFT400-Ni-50			50/box
FCFT1000-Ni-25	1000 MESH	standard 'A'	25/box
FCFT1000-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCFT200-Au-25	200 MESH	standard 'A'	25/box
FCFT200-Au-50			50/box
FCFT300-Au-25	300 MESH	standard 'A'	25/box
FCFT300-Au-50			50/box
FCFT400-Au-25	400 MESH	standard 'A'	25/box
FCFT400-Au-50			50/box
FCFT1000-Au-25	1000 MESH	standard 'A'	25/box
FCFT1000-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCFT200-Cu-SB	200 MESH	standard 'B'	50/box
FCFT200-Cu-SC		standard 'C'	50/box
FCFT200-Cu-UA		ultra-thin 'A'	50/box
FCFT200-Cu-UB		ultra-thin 'B'	50/box
FCFT200-Cu-UC		ultra-thin 'C'	50/box
FCFT200-Cu-TA		thick 'A'	50/box
FCFT200-Cu-TB		thick 'B'	50/box
FCFT200-Cu-TC		thick 'C'	50/box
FCFT200-Cu-EA		extra thick 'A'	50/box
FCFT200-Cu-EB		extra thick 'B'	50/box
FCFT200-Cu-EC		extra thick 'C'	50/box
FCFT300-Cu-SB	300 MESH	standard 'B'	50/box
FCFT300-Cu-SC		standard 'C'	50/box
FCFT300-Cu-UA		ultra-thin 'A'	50/box
FCFT300-Cu-UB		ultra-thin 'B'	50/box
FCFT300-Cu-UC		ultra-thin 'C'	50/box
FCFT300-Cu-TA		thick 'A'	50/box
FCFT300-Cu-TB		thick 'B'	50/box
FCFT300-Cu-TC		thick 'C'	50/box
FCFT300-Cu-EA		extra thick 'A'	50/box
FCFT300-Cu-EB		extra thick 'B'	50/box
FCFT300-Cu-EC		extra thick 'C'	50/box
FCFT400-Cu-SB	400 MESH	standard 'B'	50/box
FCFT400-Cu-SC		standard 'C'	50/box
FCFT400-Cu-UA		ultra-thin 'A'	50/box
FCFT400-Cu-UB		ultra-thin 'B'	50/box
FCFT400-Cu-UC		ultra-thin 'C'	50/box
FCFT400-Cu-TA		thick 'A'	50/box
FCFT400-Cu-TB		thick 'B'	50/box
FCFT400-Cu-TC		thick 'C'	50/box
FCFT400-Cu-EA		extra thick 'A'	50/box
FCFT400-Cu-EB		extra thick 'B'	50/box
FCFT400-Cu-EC		extra thick 'C'	50/box
FCFT1000-Cu-SB	1000 MESH	standard 'B'	50/box
FCFT1000-Cu-SC		standard 'C'	50/box
FCFT1000-Cu-UA		ultra-thin 'A'	50/box
FCFT1000-Cu-UB		ultra-thin 'B'	50/box
FCFT1000-Cu-UC		ultra-thin 'C'	50/box
FCFT1000-Cu-TA		thick 'A'	50/box
FCFT1000-Cu-TB		thick 'B'	50/box
FCFT1000-Cu-TC		thick 'C'	50/box
FCFT1000-Cu-EA		extra thick 'A'	50/box
FCFT1000-Cu-EB		extra thick 'B'	50/box
FCFT1000-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFT200-Ni-SB	200 MESH	standard 'B'	50/box
FCFT200-Ni-SC		standard 'C'	50/box
FCFT200-Ni-UA		ultra-thin 'A'	50/box
FCFT200-Ni-UB		ultra-thin 'B'	50/box
FCFT200-Ni-UC		ultra-thin 'C'	50/box
FCFT200-Ni-TA		thick 'A'	50/box
FCFT200-Ni-TB		thick 'B'	50/box
FCFT200-Ni-TC		thick 'C'	50/box
FCFT200-Ni-EA		extra thick 'A'	50/box
FCFT200-Ni-EB		extra thick 'B'	50/box
FCFT200-Ni-EC		extra thick 'C'	50/box
FCFT300-Ni-SB	300 MESH	standard 'B'	50/box
FCFT300-Ni-SC		standard 'C'	50/box
FCFT300-Ni-UA		ultra-thin 'A'	50/box
FCFT300-Ni-UB		ultra-thin 'B'	50/box
FCFT300-Ni-UC		ultra-thin 'C'	50/box
FCFT300-Ni-TA		thick 'A'	50/box
FCFT300-Ni-TB		thick 'B'	50/box
FCFT300-Ni-TC		thick 'C'	50/box
FCFT300-Ni-EA		extra thick 'A'	50/box
FCFT300-Ni-EB		extra thick 'B'	50/box
FCFT300-Ni-EC		extra thick 'C'	50/box
FCFT400-Ni-SB	400 MESH	standard 'B'	50/box
FCFT400-Ni-SC		standard 'C'	50/box
FCFT400-Ni-UA		ultra-thin 'A'	50/box
FCFT400-Ni-UB		ultra-thin 'B'	50/box
FCFT400-Ni-UC		ultra-thin 'C'	50/box
FCFT400-Ni-TA		thick 'A'	50/box
FCFT400-Ni-TB		thick 'B'	50/box
FCFT400-Ni-TC		thick 'C'	50/box
FCFT400-Ni-EA		extra thick 'A'	50/box
FCFT400-Ni-EB		extra thick 'B'	50/box
FCFT400-Ni-EC		extra thick 'C'	50/box
FCFT1000-Ni-SB	1000 MESH	standard 'B'	50/box
FCFT1000-Ni-SC		standard 'C'	50/box
FCFT1000-Ni-UA		ultra-thin 'A'	50/box
FCFT1000-Ni-UB		ultra-thin 'B'	50/box
FCFT1000-Ni-UC		ultra-thin 'C'	50/box
FCFT1000-Ni-TA		thick 'A'	50/box
FCFT1000-Ni-TB		thick 'B'	50/box
FCFT1000-Ni-TC		thick 'C'	50/box
FCFT1000-Ni-EA		extra thick 'A'	50/box
FCFT1000-Ni-EB		extra thick 'B'	50/box
FCFT1000-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFT200-Au-SB	200 MESH	standard 'B'	50/box
FCFT200-Au-SC		standard 'C'	50/box
FCFT200-Au-UA		ultra-thin 'A'	50/box
FCFT200-Au-UB		ultra-thin 'B'	50/box
FCFT200-Au-UC		ultra-thin 'C'	50/box
FCFT200-Au-TA		thick 'A'	50/box
FCFT200-Au-TB		thick 'B'	50/box
FCFT200-Au-TC		thick 'C'	50/box
FCFT200-Au-EA		extra thick 'A'	50/box
FCFT200-Au-EB		extra thick 'B'	50/box
FCFT200-Au-EC		extra thick 'C'	50/box
FCFT300-Au-SB	300 MESH	standard 'B'	50/box
FCFT300-Au-SC		standard 'C'	50/box
FCFT300-Au-UA		ultra-thin 'A'	50/box
FCFT300-Au-UB		ultra-thin 'B'	50/box
FCFT300-Au-UC		ultra-thin 'C'	50/box
FCFT300-Au-TA		thick 'A'	50/box
FCFT300-Au-TB		thick 'B'	50/box
FCFT300-Au-TC		thick 'C'	50/box
FCFT300-Au-EA		extra thick 'A'	50/box
FCFT300-Au-EB		extra thick 'B'	50/box
FCFT300-Au-EC		extra thick 'C'	50/box
FCFT400-Au-SB	400 MESH	standard 'B'	50/box
FCFT400-Au-SC		standard 'C'	50/box
FCFT400-Au-UA		ultra-thin 'A'	50/box
FCFT400-Au-UB		ultra-thin 'B'	50/box
FCFT400-Au-UC		ultra-thin 'C'	50/box
FCFT400-Au-TA		thick 'A'	50/box
FCFT400-Au-TB		thick 'B'	50/box
FCFT400-Au-TC		thick 'C'	50/box
FCFT400-Au-EA		extra thick 'A'	50/box
FCFT400-Au-EB		extra thick 'B'	50/box
FCFT400-Au-EC		extra thick 'C'	50/box
FCFT1000-Au-SB	1000 MESH	standard 'B'	50/box
FCFT1000-Au-SC		standard 'C'	50/box
FCFT1000-Au-UA		ultra-thin 'A'	50/box
FCFT1000-Au-UB		ultra-thin 'B'	50/box
FCFT1000-Au-UC		ultra-thin 'C'	50/box
FCFT1000-Au-TA		thick 'A'	50/box
FCFT1000-Au-TB		thick 'B'	50/box
FCFT1000-Au-TC		thick 'C'	50/box
FCFT1000-Au-EA		extra thick 'A'	50/box
FCFT1000-Au-EB		extra thick 'B'	50/box
FCFT1000-Au-EC		extra thick 'C'	50/box

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III Formvar/Carbon Thin Bar Hexagonal Mesh

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCFTH200-Cu-25	200 MESH	standard 'A'	25/box
FCFTH200-Cu-50			50/box
FCFTH300-Cu-25	300 MESH	standard 'A'	25/box
FCFTH300-Cu-50			50/box
FCFTH400-Cu-25	400 MESH	standard 'A'	25/box
FCFTH400-Cu-50			50/box
FCFTH600-Cu-25	600 MESH	standard 'A'	25/box
FCFTH600-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCFTH200-Ni-25	200 MESH	standard 'A'	25/box
FCFTH200-Ni-50			50/box
FCFTH300-Ni-25	300 MESH	standard 'A'	25/box
FCFTH300-Ni-50			50/box
FCFTH400-Ni-25	400 MESH	standard 'A'	25/box
FCFTH400-Ni-50			50/box
FCFTH600-Ni-25	600 MESH	standard 'A'	25/box
FCFTH600-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCFTH200-Au-25	200 MESH	standard 'A'	25/box
FCFTH200-Au-50			50/box
FCFTH300-Au-25	300 MESH	standard 'A'	25/box
FCFTH300-Au-50			50/box
FCFTH400-Au-25	400 MESH	standard 'A'	25/box
FCFTH400-Au-50			50/box
FCFTH600-Au-25	600 MESH	standard 'A'	25/box
FCFTH600-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCFTH200-Cu-SB	200 MESH	standard 'B'	50/box
FCFTH200-Cu-SC		standard 'C'	50/box
FCFTH200-Cu-UA		ultra-thin 'A'	50/box
FCFTH200-Cu-UB		ultra-thin 'B'	50/box
FCFTH200-Cu-UC		ultra-thin 'C'	50/box
FCFTH200-Cu-TA		thick 'A'	50/box
FCFTH200-Cu-TB		thick 'B'	50/box
FCFTH200-Cu-TC		thick 'C'	50/box
FCFTH200-Cu-EA		extra thick 'A'	50/box
FCFTH200-Cu-EB		extra thick 'B'	50/box
FCFTH200-Cu-EC		extra thick 'C'	50/box
FCFTH300-Cu-SB	300 MESH	standard 'B'	50/box
FCFTH300-Cu-SC		standard 'C'	50/box
FCFTH300-Cu-UA		ultra-thin 'A'	50/box
FCFTH300-Cu-UB		ultra-thin 'B'	50/box
FCFTH300-Cu-UC		ultra-thin 'C'	50/box
FCFTH300-Cu-TA		thick 'A'	50/box
FCFTH300-Cu-TB		thick 'B'	50/box
FCFTH300-Cu-TC		thick 'C'	50/box
FCFTH300-Cu-EA		extra thick 'A'	50/box
FCFTH300-Cu-EB		extra thick 'B'	50/box
FCFTH300-Cu-EC		extra thick 'C'	50/box
FCFTH400-Cu-SB	400 MESH	standard 'B'	50/box
FCFTH400-Cu-SC		standard 'C'	50/box
FCFTH400-Cu-UA		ultra-thin 'A'	50/box
FCFTH400-Cu-UB		ultra-thin 'B'	50/box
FCFTH400-Cu-UC		ultra-thin 'C'	50/box
FCFTH400-Cu-TA		thick 'A'	50/box
FCFTH400-Cu-TB		thick 'B'	50/box
FCFTH400-Cu-TC		thick 'C'	50/box
FCFTH400-Cu-EA		extra thick 'A'	50/box
FCFTH400-Cu-EB		extra thick 'B'	50/box
FCFTH400-Cu-EC		extra thick 'C'	50/box
FCFTH600-Cu-SB	600 MESH	standard 'B'	50/box
FCFTH600-Cu-SC		standard 'C'	50/box
FCFTH600-Cu-UA		ultra-thin 'A'	50/box
FCFTH600-Cu-UB		ultra-thin 'B'	50/box
FCFTH600-Cu-UC		ultra-thin 'C'	50/box
FCFTH600-Cu-TA		thick 'A'	50/box
FCFTH600-Cu-TB		thick 'B'	50/box
FCFTH600-Cu-TC		thick 'C'	50/box
FCFTH600-Cu-EA		extra thick 'A'	50/box
FCFTH600-Cu-EB		extra thick 'B'	50/box
FCFTH600-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFTH200-Ni-SB	200 MESH	standard 'B'	50/box
FCFTH200-Ni-SC		standard 'C'	50/box
FCFTH200-Ni-UA		ultra-thin 'A'	50/box
FCFTH200-Ni-UB		ultra-thin 'B'	50/box
FCFTH200-Ni-UC		ultra-thin 'C'	50/box
FCFTH200-Ni-TA		thick 'A'	50/box
FCFTH200-Ni-TB		thick 'B'	50/box
FCFTH200-Ni-TC		thick 'C'	50/box
FCFTH200-Ni-EA		extra thick 'A'	50/box
FCFTH200-Ni-EB		extra thick 'B'	50/box
FCFTH200-Ni-EC		extra thick 'C'	50/box
FCFTH300-Ni-SB	300 MESH	standard 'B'	50/box
FCFTH300-Ni-SC		standard 'C'	50/box
FCFTH300-Ni-UA		ultra-thin 'A'	50/box
FCFTH300-Ni-UB		ultra-thin 'B'	50/box
FCFTH300-Ni-UC		ultra-thin 'C'	50/box
FCFTH300-Ni-TA		thick 'A'	50/box
FCFTH300-Ni-TB		thick 'B'	50/box
FCFTH300-Ni-TC		thick 'C'	50/box
FCFTH300-Ni-EA		extra thick 'A'	50/box
FCFTH300-Ni-EB		extra thick 'B'	50/box
FCFTH300-Ni-EC		extra thick 'C'	50/box
FCFTH400-Ni-SB	400 MESH	standard 'B'	50/box
FCFTH400-Ni-SC		standard 'C'	50/box
FCFTH400-Ni-UA		ultra-thin 'A'	50/box
FCFTH400-Ni-UB		ultra-thin 'B'	50/box
FCFTH400-Ni-UC		ultra-thin 'C'	50/box
FCFTH400-Ni-TA		thick 'A'	50/box
FCFTH400-Ni-TB		thick 'B'	50/box
FCFTH400-Ni-TC		thick 'C'	50/box
FCFTH400-Ni-EA		extra thick 'A'	50/box
FCFTH400-Ni-EB		extra thick 'B'	50/box
FCFTH400-Ni-EC		extra thick 'C'	50/box
FCFTH600-Ni-SB	600 MESH	standard 'B'	50/box
FCFTH600-Ni-SC		standard 'C'	50/box
FCFTH600-Ni-UA		ultra-thin 'A'	50/box
FCFTH600-Ni-UB		ultra-thin 'B'	50/box
FCFTH600-Ni-UC		ultra-thin 'C'	50/box
FCFTH600-Ni-TA		thick 'A'	50/box
FCFTH600-Ni-TB		thick 'B'	50/box
FCFTH600-Ni-TC		thick 'C'	50/box
FCFTH600-Ni-EA		extra thick 'A'	50/box
FCFTH600-Ni-EB		extra thick 'B'	50/box
FCFTH600-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFTH200-Au-SB	200 MESH	standard 'B'	50/box
FCFTH200-Au-SC		standard 'C'	50/box
FCFTH200-Au-UA		ultra-thin 'A'	50/box
FCFTH200-Au-UB		ultra-thin 'B'	50/box
FCFTH200-Au-UC		ultra-thin 'C'	50/box
FCFTH200-Au-TA		thick 'A'	50/box
FCFTH200-Au-TB		thick 'B'	50/box
FCFTH200-Au-TC		thick 'C'	50/box
FCFTH200-Au-EA		extra thick 'A'	50/box
FCFTH200-Au-EB		extra thick 'B'	50/box
FCFTH200-Au-EC		extra thick 'C'	50/box
FCFTH300-Au-SB	300 MESH	standard 'B'	50/box
FCFTH300-Au-SC		standard 'C'	50/box
FCFTH300-Au-UA		ultra-thin 'A'	50/box
FCFTH300-Au-UB		ultra-thin 'B'	50/box
FCFTH300-Au-UC		ultra-thin 'C'	50/box
FCFTH300-Au-TA		thick 'A'	50/box
FCFTH300-Au-TB		thick 'B'	50/box
FCFTH300-Au-TC		thick 'C'	50/box
FCFTH300-Au-EA		extra thick 'A'	50/box
FCFTH300-Au-EB		extra thick 'B'	50/box
FCFTH300-Au-EC		extra thick 'C'	50/box
FCFTH400-Au-SB	400 MESH	standard 'B'	50/box
FCFTH400-Au-SC		standard 'C'	50/box
FCFTH400-Au-UA		ultra-thin 'A'	50/box
FCFTH400-Au-UB		ultra-thin 'B'	50/box
FCFTH400-Au-UC		ultra-thin 'C'	50/box
FCFTH400-Au-TA		thick 'A'	50/box
FCFTH400-Au-TB		thick 'B'	50/box
FCFTH400-Au-TC		thick 'C'	50/box
FCFTH400-Au-EA		extra thick 'A'	50/box
FCFTH400-Au-EB		extra thick 'B'	50/box
FCFTH400-Au-EC		extra thick 'C'	50/box
FCFTH600-Au-SB	600 MESH	standard 'B'	50/box
FCFTH600-Au-SC		standard 'C'	50/box
FCFTH600-Au-UA		ultra-thin 'A'	50/box
FCFTH600-Au-UB		ultra-thin 'B'	50/box
FCFTH600-Au-UC		ultra-thin 'C'	50/box
FCFTH600-Au-TA		thick 'A'	50/box
FCFTH600-Au-TB		thick 'B'	50/box
FCFTH600-Au-TC		thick 'C'	50/box
FCFTH600-Au-EA		extra thick 'A'	50/box
FCFTH600-Au-EB		extra thick 'B'	50/box
FCFTH600-Au-EC		extra thick 'C'	50/box

SUPPORT FILM ON GRIDS

Formvar/Carbon Slots

COPPER NICKEL GOLD

Standard Thickness

Cat. #	Type	Thickness	Qty
FCF205-Cu-25	2 x 0.5mm	standard 'A'	25/box
FCF205-Cu-50			50/box
FCF2010-Cu-25	2 x 1mm	standard 'A'	25/box
FCF2010-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCF205-Ni-25	2 x 0.5mm	standard 'A'	25/box
FCF205-Ni-50			50/box
FCF2010-Ni-25	2 x 1mm	standard 'A'	25/box
FCF2010-Ni-50			50/box

Cat. #	Type	Thickness	Qty
FCF205-Au-25	2 x 0.5mm	standard 'A'	25/box
FCF205-Au-50			50/box
FCF2010-Au-25	2 x 1mm	standard 'A'	25/box
FCF2010-Au-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCF205-Cu-SB	2 x 0.5mm	standard 'B'	50/box
FCF205-Cu-SC		standard 'C'	50/box
FCF205-Cu-UA		ultra-thin 'A'	50/box
FCF205-Cu-UB		ultra-thin 'B'	50/box
FCF205-Cu-UC		ultra-thin 'C'	50/box
FCF205-Cu-TA		thick 'A'	50/box
FCF205-Cu-TB		thick 'B'	50/box
FCF205-Cu-TC		thick 'C'	50/box
FCF205-Cu-EA		extra thick 'A'	50/box
FCF205-Cu-EB		extra thick 'B'	50/box
FCF205-Cu-EC		extra thick 'C'	50/box
FCF2010-Cu-SB	2 x 1mm	standard 'B'	50/box
FCF2010-Cu-SC		standard 'C'	50/box
FCF2010-Cu-UA		ultra-thin 'A'	50/box
FCF2010-Cu-UB		ultra-thin 'B'	50/box
FCF2010-Cu-UC		ultra-thin 'C'	50/box
FCF2010-Cu-TA		thick 'A'	50/box
FCF2010-Cu-TB		thick 'B'	50/box
FCF2010-Cu-TC		thick 'C'	50/box
FCF2010-Cu-EA		extra thick 'A'	50/box
FCF2010-Cu-EB		extra thick 'B'	50/box
FCF2010-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF205-Ni-SB	2 x 0.5mm	standard 'B'	50/box
FCF205-Ni-SC		standard 'C'	50/box
FCF205-Ni-UA		ultra-thin 'A'	50/box
FCF205-Ni-UB		ultra-thin 'B'	50/box
FCF205-Ni-UC		ultra-thin 'C'	50/box
FCF205-Ni-TA		thick 'A'	50/box
FCF205-Ni-TB		thick 'B'	50/box
FCF205-Ni-TC		thick 'C'	50/box
FCF205-Ni-EA		extra thick 'A'	50/box
FCF205-Ni-EB		extra thick 'B'	50/box
FCF205-Ni-EC		extra thick 'C'	50/box
FCF2010-Ni-SB	2 x 1mm	standard 'B'	50/box
FCF2010-Ni-SC		standard 'C'	50/box
FCF2010-Ni-UA		ultra-thin 'A'	50/box
FCF2010-Ni-UB		ultra-thin 'B'	50/box
FCF2010-Ni-UC		ultra-thin 'C'	50/box
FCF2010-Ni-TA		thick 'A'	50/box
FCF2010-Ni-TB		thick 'B'	50/box
FCF2010-Ni-TC		thick 'C'	50/box
FCF2010-Ni-EA		extra thick 'A'	50/box
FCF2010-Ni-EB		extra thick 'B'	50/box
FCF2010-Ni-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCF205-Au-SB	2 x 0.5mm	standard 'B'	50/box
FCF205-Au-SC		standard 'C'	50/box
FCF205-Au-UA		ultra-thin 'A'	50/box
FCF205-Au-UB		ultra-thin 'B'	50/box
FCF205-Au-UC		ultra-thin 'C'	50/box
FCF205-Au-TA		thick 'A'	50/box
FCF205-Au-TB		thick 'B'	50/box
FCF205-Au-TC		thick 'C'	50/box
FCF205-Au-EA		extra thick 'A'	50/box
FCF205-Au-EB		extra thick 'B'	50/box
FCF205-Au-EC		extra thick 'C'	50/box
FCF2010-Au-SB	2 x 1mm	standard 'B'	50/box
FCF2010-Au-SC		standard 'C'	50/box
FCF2010-Au-UA		ultra-thin 'A'	50/box
FCF2010-Au-UB		ultra-thin 'B'	50/box
FCF2010-Au-UC		ultra-thin 'C'	50/box
FCF2010-Au-TA		thick 'A'	50/box
FCF2010-Au-TB		thick 'B'	50/box
FCF2010-Au-TC		thick 'C'	50/box
FCF2010-Au-EA		extra thick 'A'	50/box
FCF2010-Au-EB		extra thick 'B'	50/box
FCF2010-Au-EC		extra thick 'C'	50/box

Formvar/Carbon Single Hole

COPPER NICKEL

Standard Thickness

Cat. #	Type	Thickness	Qty
FCFGA75-Cu-25	75 micron	standard 'A'	25/box
FCFGA75-Cu-50			50/box
FCFGA100-Cu-25	100 micron	standard 'A'	25/box
FCFGA100-Cu-50			50/box
FCFGA150-Cu-25	150 micron	standard 'A'	25/box
FCFGA150-Cu-50			50/box
FCFGA200-Cu-25	200 micron	standard 'A'	25/box
FCFGA200-Cu-50			50/box
FCFGA300-Cu-25	300 micron	standard 'A'	25/box
FCFGA300-Cu-50			50/box
FCFGA400-Cu-25	400 micron	standard 'A'	25/box
FCFGA400-Cu-50			50/box
FCFGA600-Cu-25	600 micron	standard 'A'	25/box
FCFGA600-Cu-50			50/box
FCFGA800-Cu-25	800 micron	standard 'A'	25/box
FCFGA800-Cu-50			50/box
FCFGA1000-Cu-25	1000 micron	standard 'A'	25/box
FCFGA1000-Cu-50			50/box
FCFGA1500-Cu-25	1500 micron	standard 'A'	25/box
FCFGA1500-Cu-50			50/box

Cat. #	Type	Thickness	Qty
FCFGA75-Ni-25	75 micron	standard 'A'	25/box
FCFGA75-Ni-50			50/box
FCFGA100-Niu-25	100 micron	standard 'A'	25/box
FCFGA100-Ni-50			50/box
FCFGA150-Ni-25	150 micron	standard 'A'	25/box
FCFGA150-Ni-50			50/box
FCFGA200-Ni-25	200 micron	standard 'A'	25/box
FCFGA200-Ni-50			50/box
FCFGA300-Ni-25	300 micron	standard 'A'	25/box
FCFGA300-Ni-50			50/box
FCFGA400-Ni-25	400 micron	standard 'A'	25/box
FCFGA400-Ni-50			50/box
FCFGA600-Ni-25	600 micron	standard 'A'	25/box
FCFGA600-Ni-50			50/box
FCFGA800-Ni-25	800 micron	standard 'A'	25/box
FCFGA800-Ni-50			50/box
FCFGA1000-Ni-25	1000 micron	standard 'A'	25/box
FCFGA1000-Ni-50			50/box
FCFGA1500-Ni-25	1500 micron	standard 'A'	25/box
FCFGA1500-Ni-50			50/box

NEW Thickness Ranges

Cat. #	Type	Thickness	Qty
FCFGA75-Cu-SB	75 micron	standard 'B'	50/box
FCFGA75-Cu-SC		standard 'C'	50/box
FCFGA75-Cu-UA		ultra-thin 'A'	50/box
FCFGA75-Cu-UB		ultra-thin 'B'	50/box
FCFGA75-Cu-UC		ultra-thin 'C'	50/box
FCFGA75-Cu-TA		thick 'A'	50/box
FCFGA75-Cu-TB		thick 'B'	50/box
FCFGA75-Cu-TC		thick 'C'	50/box
FCFGA75-Cu-EA		extra thick 'A'	50/box
FCFGA75-Cu-EB		extra thick 'B'	50/box
FCFGA75-Cu-EC		extra thick 'C'	50/box

Cat. #	Type	Thickness	Qty
FCFGA75-Ni-SB	75 micron	standard 'B'	50/box
FCFGA75-Ni-SC		standard 'C'	50/box
FCFGA75-Ni-UA		ultra-thin 'A'	50/box
FCFGA75-Ni-UB		ultra-thin 'B'	50/box
FCFGA75-Ni-UC		ultra-thin 'C'	50/box
FCFGA75-Ni-TA		thick 'A'	50/box
FCFGA75-Ni-TB		thick 'B'	50/box
FCFGA75-Ni-TC		thick 'C'	50/box
FCFGA75-Ni-EA		extra thick 'A'	50/box
FCFGA75-Ni-EB		extra thick 'B'	50/box
FCFGA75-Ni-EC		extra thick 'C'	50/box

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III Formvar/Carbon Single Hole (continued)

NEW Thickness Ranges (continued)

COPPER NICKEL

Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty
FCFGA100-Cu-SB	100 micron	standard 'B'	50/box	FCFGA100-Ni-SB	100 micron	standard 'B'	50/box
FCFGA100-Cu-SC		standard 'C'	50/box	FCFGA100-Ni-SC		standard 'C'	50/box
FCFGA100-Cu-UA		ultra-thin 'A'	50/box	FCFGA100-Ni-UA		ultra-thin 'A'	50/box
FCFGA100-Cu-UB		ultra-thin 'B'	50/box	FCFGA100-Ni-UB		ultra-thin 'B'	50/box
FCFGA100-Cu-UC		ultra-thin 'C'	50/box	FCFGA100-Ni-UC		ultra-thin 'C'	50/box
FCFGA100-Cu-TA		thick 'A'	50/box	FCFGA100-Ni-TA		thick 'A'	50/box
FCFGA100-Cu-TB		thick 'B'	50/box	FCFGA100-Ni-TB		thick 'B'	50/box
FCFGA100-Cu-TC		thick 'C'	50/box	FCFGA100-Ni-TC		thick 'C'	50/box
FCFGA100-Cu-EA		extra thick 'A'	50/box	FCFGA100-Ni-EA		extra thick 'A'	50/box
FCFGA100-Cu-EB		extra thick 'B'	50/box	FCFGA100-Ni-EB		extra thick 'B'	50/box
FCFGA100-Cu-EC		extra thick 'C'	50/box	FCFGA100-Ni-EC		extra thick 'C'	50/box
FCFGA150-Cu-SB	150 micron	standard 'B'	50/box	FCFGA150-Ni-SB	150 micron	standard 'B'	50/box
FCFGA150-Cu-SC		standard 'C'	50/box	FCFGA150-Ni-SC		standard 'C'	50/box
FCFGA150-Cu-UA		ultra-thin 'A'	50/box	FCFGA150-Ni-UA		ultra-thin 'A'	50/box
FCFGA150-Cu-UB		ultra-thin 'B'	50/box	FCFGA150-Ni-UB		ultra-thin 'B'	50/box
FCFGA150-Cu-UC		ultra-thin 'C'	50/box	FCFGA150-Ni-UC		ultra-thin 'C'	50/box
FCFGA150-Cu-TA		thick 'A'	50/box	FCFGA150-Ni-TA		thick 'A'	50/box
FCFGA150-Cu-TB		thick 'B'	50/box	FCFGA150-Ni-TB		thick 'B'	50/box
FCFGA150-Cu-TC		thick 'C'	50/box	FCFGA150-Ni-TC		thick 'C'	50/box
FCFGA150-Cu-EA		extra thick 'A'	50/box	FCFGA150-Ni-EA		extra thick 'A'	50/box
FCFGA150-Cu-EB		extra thick 'B'	50/box	FCFGA150-Ni-EB		extra thick 'B'	50/box
FCFGA150-Cu-EC		extra thick 'C'	50/box	FCFGA150-Ni-EC		extra thick 'C'	50/box
FCFGA200-Cu-SB	200 micron	standard 'B'	50/box	FCFGA200-Ni-SB	200 micron	standard 'B'	50/box
FCFGA200-Cu-SC		standard 'C'	50/box	FCFGA200-Ni-SC		standard 'C'	50/box
FCFGA200-Cu-UA		ultra-thin 'A'	50/box	FCFGA200-Ni-UA		ultra-thin 'A'	50/box
FCFGA200-Cu-UB		ultra-thin 'B'	50/box	FCFGA200-Ni-UB		ultra-thin 'B'	50/box
FCFGA200-Cu-UC		ultra-thin 'C'	50/box	FCFGA200-Ni-UC		ultra-thin 'C'	50/box
FCFGA200-Cu-TA		thick 'A'	50/box	FCFGA200-Ni-TA		thick 'A'	50/box
FCFGA200-Cu-TB		thick 'B'	50/box	FCFGA200-Ni-TB		thick 'B'	50/box
FCFGA200-Cu-TC		thick 'C'	50/box	FCFGA200-Ni-TC		thick 'C'	50/box
FCFGA200-Cu-EA		extra thick 'A'	50/box	FCFGA200-Ni-EA		extra thick 'A'	50/box
FCFGA200-Cu-EB		extra thick 'B'	50/box	FCFGA200-Ni-EB		extra thick 'B'	50/box
FCFGA200-Cu-EC		extra thick 'C'	50/box	FCFGA200-Ni-EC		extra thick 'C'	50/box
FCFGA300-Cu-SB	300 micron	standard 'B'	50/box	FCFGA300-Ni-SB	300 micron	standard 'B'	50/box
FCFGA300-Cu-SC		standard 'C'	50/box	FCFGA300-Ni-SC		standard 'C'	50/box
FCFGA300-Cu-UA		ultra-thin 'A'	50/box	FCFGA300-Ni-UA		ultra-thin 'A'	50/box
FCFGA300-Cu-UB		ultra-thin 'B'	50/box	FCFGA300-Ni-UB		ultra-thin 'B'	50/box
FCFGA300-Cu-UC		ultra-thin 'C'	50/box	FCFGA300-Ni-UC		ultra-thin 'C'	50/box
FCFGA300-Cu-TA		thick 'A'	50/box	FCFGA300-Ni-TA		thick 'A'	50/box
FCFGA300-Cu-TB		thick 'B'	50/box	FCFGA300-Ni-TB		thick 'B'	50/box
FCFGA300-Cu-TC		thick 'C'	50/box	FCFGA300-Ni-TC		thick 'C'	50/box
FCFGA300-Cu-EA		extra thick 'A'	50/box	FCFGA300-Ni-EA		extra thick 'A'	50/box
FCFGA300-Cu-EB		extra thick 'B'	50/box	FCFGA300-Ni-EB		extra thick 'B'	50/box
FCFGA300-Cu-EC		extra thick 'C'	50/box	FCFGA300-Ni-EC		extra thick 'C'	50/box
FCFGA400-Cu-SB	400 micron	standard 'B'	50/box	FCFGA400-Ni-SB	400 micron	standard 'B'	50/box
FCFGA400-Cu-SC		standard 'C'	50/box	FCFGA400-Ni-SC		standard 'C'	50/box
FCFGA400-Cu-UA		ultra-thin 'A'	50/box	FCFGA400-Ni-UA		ultra-thin 'A'	50/box
FCFGA400-Cu-UB		ultra-thin 'B'	50/box	FCFGA400-Ni-UB		ultra-thin 'B'	50/box
FCFGA400-Cu-UC		ultra-thin 'C'	50/box	FCFGA400-Ni-UC		ultra-thin 'C'	50/box
FCFGA400-Cu-TA		thick 'A'	50/box	FCFGA400-Ni-TA		thick 'A'	50/box
FCFGA400-Cu-TB		thick 'B'	50/box	FCFGA400-Ni-TB		thick 'B'	50/box
FCFGA400-Cu-TC		thick 'C'	50/box	FCFGA400-Ni-TC		thick 'C'	50/box
FCFGA400-Cu-EA		extra thick 'A'	50/box	FCFGA400-Ni-EA		extra thick 'A'	50/box
FCFGA400-Cu-EB		extra thick 'B'	50/box	FCFGA400-Ni-EB		extra thick 'B'	50/box
FCFGA400-Cu-EC		extra thick 'C'	50/box	FCFGA400-Ni-EC		extra thick 'C'	50/box

continues »»»

SUPPORT FILM ON GRIDS

Formvar/Carbon Single Hole (continued)

COPPER NICKEL

NEW Thickness Ranges (continued)

Cat. #	Type	Thickness	Qty	Cat. #	Type	Thickness	Qty
FCFGA600-Cu-SB	600 micron	standard 'B'	50/box	FCFGA600-Ni-SB	600 micron	standard 'B'	50/box
FCFGA600-Cu-SC		standard 'C'	50/box	FCFGA600-Ni-SC		standard 'C'	50/box
FCFGA600-Cu-UA		ultra-thin 'A'	50/box	FCFGA600-Ni-UA		ultra-thin 'A'	50/box
FCFGA600-Cu-UB		ultra-thin 'B'	50/box	FCFGA600-Ni-UB		ultra-thin 'B'	50/box
FCFGA600-Cu-UC		ultra-thin 'C'	50/box	FCFGA600-Ni-UC		ultra-thin 'C'	50/box
FCFGA600-Cu-TA		thick 'A'	50/box	FCFGA600-Ni-TA		thick 'A'	50/box
FCFGA600-Cu-TB		thick 'B'	50/box	FCFGA600-Ni-TB		thick 'B'	50/box
FCFGA600-Cu-TC		thick 'C'	50/box	FCFGA600-Ni-TC		thick 'C'	50/box
FCFGA600-Cu-EA		extra thick 'A'	50/box	FCFGA600-Ni-EA		extra thick 'A'	50/box
FCFGA600-Cu-EB		extra thick 'B'	50/box	FCFGA600-Ni-EB		extra thick 'B'	50/box
FCFGA600-Cu-EC		extra thick 'C'	50/box	FCFGA600-Ni-EC		extra thick 'C'	50/box
FCFGA800-Cu-SB	800 micron	standard 'B'	50/box	FCFGA800-Ni-SB	800 micron	standard 'B'	50/box
FCFGA800-Cu-SC		standard 'C'	50/box	FCFGA800-Ni-SC		standard 'C'	50/box
FCFGA800-Cu-UA		ultra-thin 'A'	50/box	FCFGA800-Ni-UA		ultra-thin 'A'	50/box
FCFGA800-Cu-UB		ultra-thin 'B'	50/box	FCFGA800-Ni-UB		ultra-thin 'B'	50/box
FCFGA800-Cu-UC		ultra-thin 'C'	50/box	FCFGA800-Ni-UC		ultra-thin 'C'	50/box
FCFGA800-Cu-TA		thick 'A'	50/box	FCFGA800-Ni-TA		thick 'A'	50/box
FCFGA800-Cu-TB		thick 'B'	50/box	FCFGA800-Ni-TB		thick 'B'	50/box
FCFGA800-Cu-TC		thick 'C'	50/box	FCFGA800-Ni-TC		thick 'C'	50/box
FCFGA800-Cu-EA		extra thick 'A'	50/box	FCFGA800-Ni-EA		extra thick 'A'	50/box
FCFGA800-Cu-EB		extra thick 'B'	50/box	FCFGA800-Ni-EB		extra thick 'B'	50/box
FCFGA800-Cu-EC		extra thick 'C'	50/box	FCFGA800-Ni-EC		extra thick 'C'	50/box
FCFGA1000-Cu-SB	1000 micron	standard 'B'	50/box	FCFGA1000-Ni-SB	1000 micron	standard 'B'	50/box
FCFGA1000-Cu-SC		standard 'C'	50/box	FCFGA1000-Ni-SC		standard 'C'	50/box
FCFGA1000-Cu-UA		ultra-thin 'A'	50/box	FCFGA1000-Ni-UA		ultra-thin 'A'	50/box
FCFGA1000-Cu-UB		ultra-thin 'B'	50/box	FCFGA1000-Ni-UB		ultra-thin 'B'	50/box
FCFGA1000-Cu-UC		ultra-thin 'C'	50/box	FCFGA1000-Ni-UC		ultra-thin 'C'	50/box
FCFGA1000-Cu-TA		thick 'A'	50/box	FCFGA1000-Ni-TA		thick 'A'	50/box
FCFGA1000-Cu-TB		thick 'B'	50/box	FCFGA1000-Ni-TB		thick 'B'	50/box
FCFGA1000-Cu-TC		thick 'C'	50/box	FCFGA1000-Ni-TC		thick 'C'	50/box
FCFGA1000-Cu-EA		extra thick 'A'	50/box	FCFGA1000-Ni-EA		extra thick 'A'	50/box
FCFGA1000-Cu-EB		extra thick 'B'	50/box	FCFGA1000-Ni-EB		extra thick 'B'	50/box
FCFGA1000-Cu-EC		extra thick 'C'	50/box	FCFGA1000-Ni-EC		extra thick 'C'	50/box
FCFGA1500-Cu-SB	1500 micron	standard 'B'	50/box	FCFGA1500-Ni-SB	1500 micron	standard 'B'	50/box
FCFGA1500-Cu-SC		standard 'C'	50/box	FCFGA1500-Ni-SC		standard 'C'	50/box
FCFGA1500-Cu-UA		ultra-thin 'A'	50/box	FCFGA1500-Ni-UA		ultra-thin 'A'	50/box
FCFGA1500-Cu-UB		ultra-thin 'B'	50/box	FCFGA1500-Ni-UB		ultra-thin 'B'	50/box
FCFGA1500-Cu-UC		ultra-thin 'C'	50/box	FCFGA1500-Ni-UC		ultra-thin 'C'	50/box
FCFGA1500-Cu-TA		thick 'A'	50/box	FCFGA1500-Ni-TA		thick 'A'	50/box
FCFGA1500-Cu-TB		thick 'B'	50/box	FCFGA1500-Ni-TB		thick 'B'	50/box
FCFGA1500-Cu-TC		thick 'C'	50/box	FCFGA1500-Ni-TC		thick 'C'	50/box
FCFGA1500-Cu-EA		extra thick 'A'	50/box	FCFGA1500-Ni-EA		extra thick 'A'	50/box
FCFGA1500-Cu-EB		extra thick 'B'	50/box	FCFGA1500-Ni-EB		extra thick 'B'	50/box
FCFGA1500-Cu-EC		extra thick 'C'	50/box	FCFGA1500-Ni-EC		extra thick 'C'	50/box

4. Formvar/Silicon Monoxide

A formvar film stabilized with a thin film of Silicon Monoxide. Silicon Monoxide produces a desirable support film because it offers low background contrast and it is stable under the electron beam and it is more hydrophilic than carbon film.

Cat. #	Type	Qty	Cat. #	Type	Qty
FSF200-Cu	200 mesh	50/box	FSF200-Ni	200 mesh	50/box
FSF300-Cu	300 mesh	50/box	FSF300-Ni	300 mesh	50/box
FSF400-Cu	400 mesh	50/box	FSF400-Ni	400 mesh	50/box

5. Silicon Monoxide Film Only

A thin film of pure Silicon Monoxide (15–30 nm) is deposited directly on top of the grid.

Cat. #	Type	Qty	Cat. #	Type	Qty
SF200-Cu	200 mesh	50/box	SF200-Ni	200 mesh	50/box
SF300-Cu	300 mesh	50/box	SF300-Ni	300 mesh	50/box
SF400-Cu	400 mesh	50/box	SF400-Ni	400 mesh	50/box

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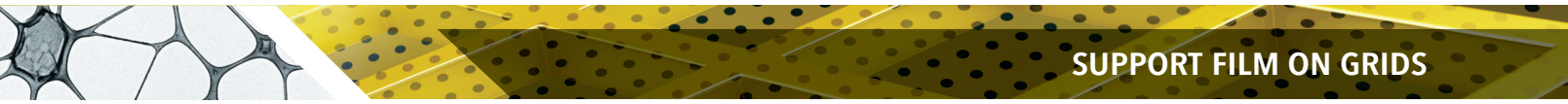

III 6a. Lacey Carbon Film

This carbon coated film on a broken pattern consists of woven-mesh-like holes of different sizes and shapes. Average hole sizes are 50, 100 and 150 microns. This type of pattern provides support but does not interfere when observing specimen sections.

Cat. #	Type	Hole Size	Qty
LC200-Cu	200 MESH	50 micron	5/box
LC200-Cu-25			25/box
LC300-Cu	300 MESH	50 micron	5/box
LC325-Cu			25/box
LC400-Cu	400 MESH	50 micron	5/box
LC400-Cu-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Ni	200 MESH	50 micron	5/box
LC200-Ni-25			25/box
LC305-Ni	300 MESH	50 micron	5/box
LC325-Ni			25/box
LC400-Ni	400 MESH	50 micron	5/box
LC400-Ni-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Au	200 MESH	50 micron	5/box
LC200-Au-25			25/box
LC300-Au	300 MESH	50 micron	5/box
LC325-Au			25/box
LC400-Au	400 MESH	50 micron	5/box
LC400-Au-25			25/box

NEW Thickness Ranges

Cat. #	Type	Hole Size	Qty
LC200-Cu-100	200 MESH	100 micron	25/box
LC200-Cu-150		150 micron	25/box
LC300-Cu-100	300 MESH	100 micron	25/box
LC300-Cu-150		150 micron	25/box
LC400-Cu-100	400 MESH	100 micron	25/box
LC400-Cu-150		150 micron	25/box

Cat. #	Type	Hole Size	Qty
LC200-Ni-100	200 MESH	100 micron	25/box
LC200-Ni-150		150 micron	25/box
LC300-Ni-100	300 MESH	100 micron	25/box
LC300-Ni-150		150 micron	25/box
LC400-Ni-100	400 MESH	100 micron	25/box
LC400-Ni-150		150 micron	25/box

Cat. #	Type	Hole Size	Qty
LC200-Au-100	200 MESH	100 micron	25/box
LC200-Au-150		150 micron	25/box
LC300-Au-100	300 MESH	100 micron	25/box
LC300-Au-150		150 micron	25/box
LC400-Au-100	400 MESH	100 micron	25/box
LC400-Au-150		150 micron	25/box

NEW Ultrathin

Cat. #	Type	Thickness	Qty
LC200-Cu-UL	200 MESH	4–6 nm	25/box
LC300-Cu-UL	300 MESH	4–6 nm	25/box
LC400-Cu-UL	400 MESH	4–6 nm	25/box

Cat. #	Type	Thickness	Qty
LC200-Ni-UL	200 MESH	4–6 nm	25/box
LC300-Ni-UL	300 MESH	4–6 nm	25/box
LC400-Ni-UL	400 MESH	4–6 nm	25/box

Cat. #	Type	Thickness	Qty
LC200-Au-UL	200 MESH	4–6 nm	25/box
LC300-Au-UL	300 MESH	4–6 nm	25/box
LC400-Au-UL	400 MESH	4–6 nm	25/box

NEW Continuous Ultrathin Films

The continuous ultrathin film on lacey film allows for the thinnest support film that still has adequate strength to withstand specimen preparation. The film (less than 3nm thick) lies across a carbon lacey film supported by a 200, 300, or 400 mesh grid. The size of the holes in the lacey film differ widely from batch to batch but are generally in the range of ¼ µm to 5µm, which gives the equivalent support of at least 6000 mesh grid. Specimen material lying over the covered holes can be imaged in the TEM with practically no interference from the carbon film supporting it. This product is ideal for looking at nanotubes, virus particles and other small particulate material.

III 6b. NEW Lacey Carbon Film with a Continuous Layer of Ultrathin Carbon Film

Continuous Layer Thickness: Carbon — less than 3 nm.

Cat. #	Type	Hole Size	Qty
LC200-Cu-CC	200 MESH	50 micron	5/box
LC200-Cu-CC-25			25/box
LC300-Cu-CC	300 MESH	50 micron	5/box
LC325-Cu-CC			25/box
LC400-Cu-CC	400 MESH	50 micron	5/box
LC400-Cu-CC-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Ni-CC	200 MESH	50 micron	5/box
LC200-Ni-CC-25			25/box
LC305-Ni-CC	300 MESH	50 micron	5/box
LC325-Ni-CC			25/box
LC400-Ni-CC	400 MESH	50 micron	5/box
LC400-Ni-CC-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Au-CC	200 MESH	50 micron	5/box
LC200-Au-CC-25			25/box
LC300-Au-CC	300 MESH	50 micron	5/box
LC325-Au-CC			25/box
LC400-Au-CC	400 MESH	50 micron	5/box
LC400-Au-CC-25			25/box

III 6c. NEW Lacey Carbon Film with a Continuous Layer of Ultrathin Formvar Film

Continuous Layer Thickness: Formvar — 3-4 nm.

Cat. #	Type	Hole Size	Qty
LC200-Cu-FF	200 MESH	50 micron	5/box
LC200-Cu-FF-25			25/box
LC300-Cu-FF	300 MESH	50 micron	5/box
LC325-Cu-FF			25/box
LC400-Cu-FF	400 MESH	50 micron	5/box
LC400-Cu-FF-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Ni-FF	200 MESH	50 micron	5/box
LC200-Ni-FF-25			25/box
LC305-Ni-FF	300 MESH	50 micron	5/box
LC325-Ni-FF			25/box
LC400-Ni-FF	400 MESH	50 micron	5/box
LC400-Ni-FF-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Au-FF	200 MESH	50 micron	5/box
LC200-Au-FF-25			25/box
LC300-Au-FF	300 MESH	50 micron	5/box
LC325-Au-FF			25/box
LC400-Au-FF	400 MESH	50 micron	5/box
LC400-Au-FF-25			25/box

III 6d. NEW Lacey Carbon Film with a Continuous Layer of Ultrathin Carbon and Formvar Film

Continuous Layer Thickness: Carbon — 1 nm, Formvar — 5 nm.

Cat. #	Type	Hole Size	Qty
LC200-Cu-FCF	200 MESH	50 micron	5/box
LC200-Cu-FCF-25			25/box
LC300-Cu-FCF	300 MESH	50 micron	5/box
LC325-Cu-FCF			25/box
LC400-Cu-FCF	400 MESH	50 micron	5/box
LC400-Cu-FCF-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Ni-FCF	200 MESH	50 micron	5/box
LC200-Ni-FCF-25			25/box
LC305-Ni-FCF	300 MESH	50 micron	5/box
LC325-Ni-FCF			25/box
LC400-Ni-CFF	400 MESH	50 micron	5/box
LC400-Ni-FCF-25			25/box

Cat. #	Type	Hole Size	Qty
LC200-Au-FCF	200 MESH	50 micron	5/box
LC200-Au-FCF-25			25/box
LC300-Au-FCF	300 MESH	50 micron	5/box
LC325-Au-FCF			25/box
LC400-Au-FCF	400 MESH	50 micron	5/box
LC400-Au-FCF-25			25/box

SUPPORT FILM ON GRIDS

7a. Holey Carbon Film

A thin piece of carbon. The average hole sizes are 50, 100 and 150 microns.

Cat. #	Type	Qty
HC200-Cu	200 MESH	25/box
HC300-Cu	300 MESH	25/box
HC400-Cu	400 MESH	25/box

Cat. #	Type	Qty
HC200-Ni	200 MESH	25/box
HC300-Ni	300 MESH	25/box
HC400-Ni	400 MESH	25/box

Cat. #	Type	Qty
HC200-Au	200 MESH	25/box
HC300-Au	300 MESH	25/box
HC400-Au	400 MESH	25/box

NEW Thickness Ranges

Cat. #	Type	Hole Size	Qty
HC200-Cu-100	200 MESH	100 micron	25/box
HC200-Cu-150		150 micron	25/box
HC300-Cu-100	300 MESH	100 micron	25/box
HC300-Cu-150		150 micron	25/box
HC400-Cu-100	400 MESH	100 micron	25/box
HC400-Cu-150		150 micron	25/box

Cat. #	Type	Hole Size	Qty
HC200-Ni-100	200 MESH	100 micron	25/box
HC200-Ni-150		150 micron	25/box
HC300-Ni-100	300 MESH	100 micron	25/box
HC300-Ni-150		150 micron	25/box
HC400-Ni-100	400 MESH	100 micron	25/box
HC400-Ni-150		150 micron	25/box

Cat. #	Type	Hole Size	Qty
HC200-Au-100	200 MESH	100 micron	25/box
HC200-Au-150		150 micron	25/box
HC300-Au-100	300 MESH	100 micron	25/box
HC300-Au-150		150 micron	25/box
HC400-Au-100	400 MESH	100 micron	25/box
HC400-Au-150		150 micron	25/box

NEW Ultrathin

Cat. #	Type	Thickness	Qty
HC200-Cu-UL	200 MESH	4–6 nm	25/box
HC300-Cu-UL	300 MESH	4–6 nm	25/box
HC400-Cu-UL	400 MESH	4–6 nm	25/box

Cat. #	Type	Thickness	Qty
HC200-Ni-UL	200 MESH	4–6 nm	25/box
HC300-Ni-UL	300 MESH	4–6 nm	25/box
HC400-Ni-UL	400 MESH	4–6 nm	25/box

Cat. #	Type	Thickness	Qty
HC200-Au-UL	200 MESH	4–6 nm	25/box
HC300-Au-UL	300 MESH	4–6 nm	25/box
HC400-Au-UL	400 MESH	4–6 nm	25/box

NEW Continuous Ultrathin Films

The continuous ultrathin film on holey film allows for the thinnest support film that still has adequate strength to withstand specimen preparation The film (less than 3nm thick) lies across a carbon lacey film supported by a 200, 300, or 400 mesh grid. The size of the holes in the holey film differ widely from batch to batch but are generally in the range of ¼ µm to 5µm, which gives the equivalent support of at least 6000 mesh grid. Specimen material lying over the covered holes can be imaged in the TEM with practically no interference from the carbon film supporting it. This product is ideal for looking at nanotubes, virus particles and other small particulate material.

7b. NEW Holey Carbon Film with a Continuous Layer of Ultrathin Carbon Film

Continuous Layer Thickness: Carbon — less than 3 nm.

Cat. #	Type	Qty
HC200-Cu-CC	200 MESH	25/box
HC300-Cu-CC	300 MESH	25/box
HC400-Cu-CC	400 MESH	25/box

Cat. #	Type	Qty
HC200-Ni-CC	200 MESH	25/box
HC300-Ni-CC	300 MESH	25/box
HC400-Ni-CC	400 MESH	25/box

Cat. #	Type	Qty
HC200-Au-CC	200 MESH	25/box
HC300-Au-CC	300 MESH	25/box
HC400-Au-CC	400 MESH	25/box

7c. NEW Holey Carbon Film with a Continuous Layer of Ultrathin Formvar Film

Continuous Layer Thickness: Formvar — 3-4 nm.

Cat. #	Type	Qty
HC200-Cu-FF	200 MESH	25/box
HC300-Cu-FF	300 MESH	25/box
HC400-Cu-FF	400 MESH	25/box

Cat. #	Type	Qty
HC200-Ni-FF	200 MESH	25/box
HC300-Ni-FF	300 MESH	25/box
HC400-Ni-FF	400 MESH	25/box

Cat. #	Type	Qty
HC200-Au-FF	200 MESH	25/box
HC300-Au-FF	300 MESH	25/box
HC400-Au-FF	400 MESH	25/box

7d. NEW Holey Carbon Film with a Continuous Layer of Ultrathin Carbon and Formvar Film

Continuous Layer Thickness: Carbon 1 nm, Formvar 5 nm.

Cat. #	Type	Qty
HC200-Cu-FCF	200 MESH	25/box
HC300-Cu-FCF	300 MESH	25/box
HC400-Cu-FCF	400 MESH	25/box

Cat. #	Type	Qty
HC200-Ni-FCF	200 MESH	25/box
HC300-Ni-FCF	300 MESH	25/box
HC400-Ni-FCF	400 MESH	25/box

Cat. #	Type	Qty
HC200-Au-FCF	200 MESH	25/box
HC300-Au-FCF	300 MESH	25/box
HC400-Au-FCF	400 MESH	25/box

8. Beryllium Support Films

A deposition of 250 Angstroms thick Beryllium onto the 0.005" thick, 25x25mm squares of a Cu substrate. The Be can be removed by dissolving the substrate in nitric acid (50:50). The Be film will then be removed from the acid, washed in distilled water and mounted on TEM grids. A Be support film will reduce background interference to a minimum and it is particularly useful where analyses for C or Si are required, so that these alternative supports cannot be used. Another advantage of the Be support is its very fine grain size which produces a very sharp ring pattern for in-situ calibration.

Cat #	Description	Qty
76030	Beryllium Support Film, 25x25mm	each

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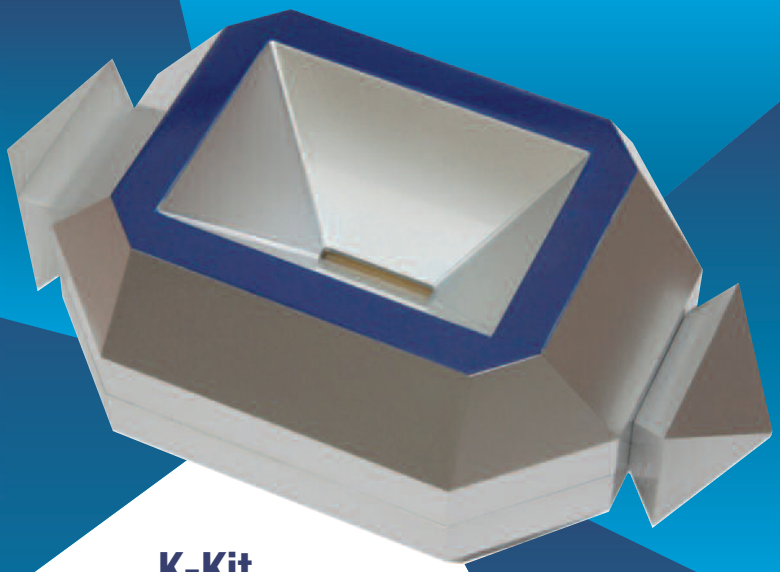
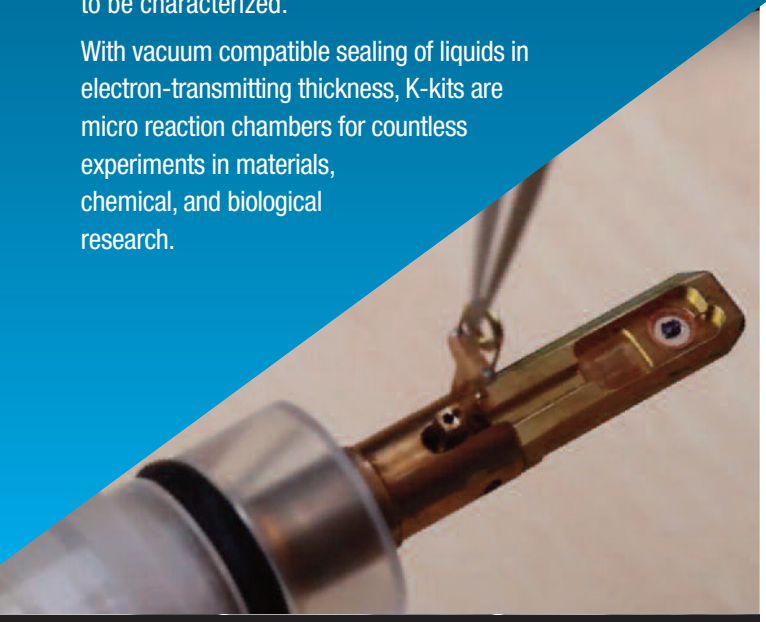
K-Kit

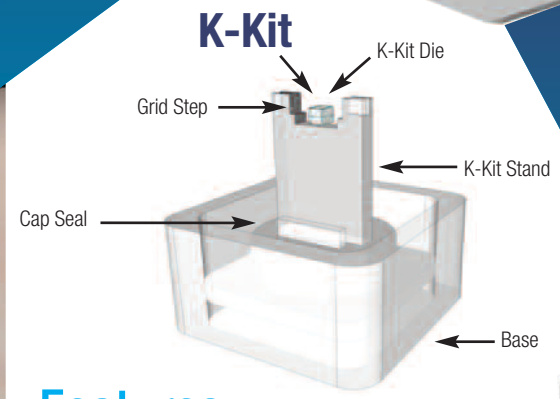
A Specimen Holder for Liquid Sample Analysis in TEM

K-kits are sample holders designed to facilitate convenient TEM observation of liquid samples, allowing nano-objects, aggregates, and agglomerates (NOAAs) in liquid samples to be characterized.

With vacuum compatible sealing of liquids in electron-transmitting thickness, K-kits are micro reaction chambers for countless experiments in materials, chemical, and biological research.





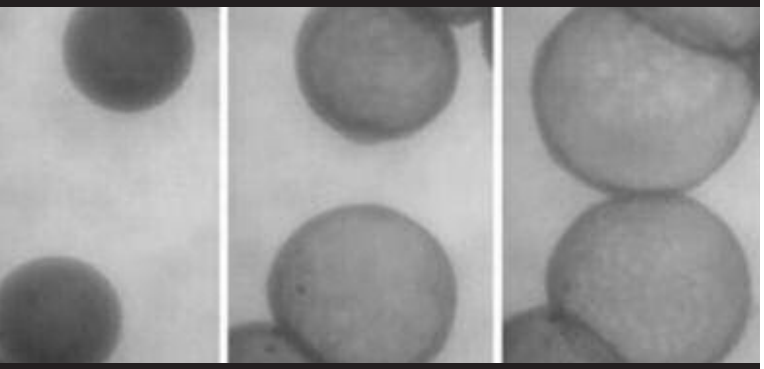


Features

- **Applicable for most TEM holder brands**
- **Strong structural reliability under vacuum**
- **Sealing glue compatible to many solvents**
- **Disposable**
- **Free of cross-contamination**
- **Easy to use**

K-Kit Tool Box

In-Situ Dynamic Observation of NOAAs in Liquid



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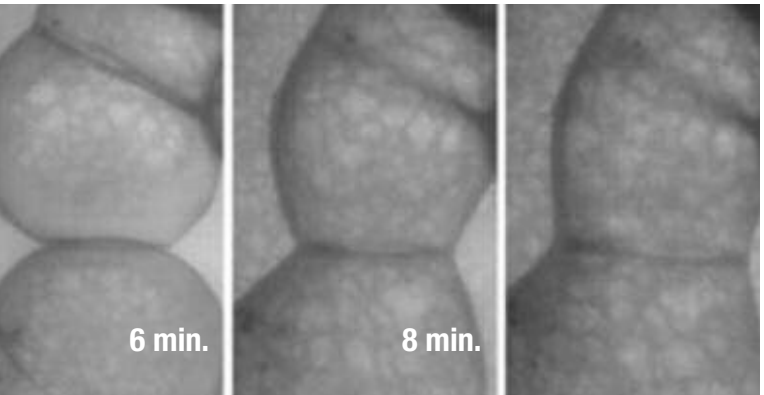
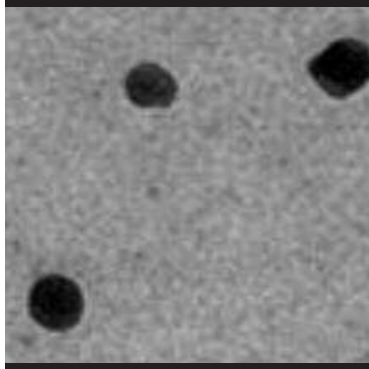
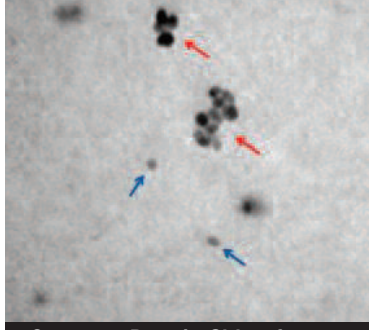


6 min. 8 min.

Protein particles in Abraxane®





Quantum Dots in Chloroform

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follow us on...

III C-flat™ Holey Carbon Grids for Cryo-TEM

The premier holey carbon grid for cryo-transmission electron microscopy

Overview

C-flat™ is an ultra-flat, holey carbon-coated TEM support grid for transmission electron microscopy (TEM). Unlike competing holey carbon films, C-flat™ is manufactured without plastics, so it is clean upon arrival and the user has no residue to contend with.

The C-flat™ Advantage

C-flat™ leads to better data sets.

Made with patent pending technology, C-flat™ provides an ultra-flat surface that results in better particle dispersion and more uniform ice thickness. Patterning is done using deep-UV projection lithography, ensuring the most accurate and consistent hole shapes and sizes down to submicron features. The precise methods by which C-flat™ is manufactured elminate artifacts such as excess carbon and edges around holes.

C-flat™ is affordable

C-flat™ is available in 25, 50, and 100 packs at a per-grid price less than competing products.

Applications

C-flat™ holey carbon grids provide the ideal specimen support to achieve high resolution data in cryo-TEM making them an ideal choice for single particle analysis, cryo electron tomography and automated TEM analysis.

Cryo-electron tomography (cryoET) and Single Particle Analysis (SPA):

Numerous researchers have reported that the ultra-flat surface of C-flat™ leads to even ice thickness and uniform particle distribution within the hole areas. This optimal particle distribution results in superior data being collected as compared with other holey support films. 2µm hole sizes are standard but custom hole sizes are available so C-flat™ can accommodate the common magnifications used for quantitative TEM analysis.

Automated TEM:

C-flat™ provides a regular array of analysis sites compatible with automated data collection software such as Leginon. This compatibility, in combination with the more uniform ice thickness and particle distribution reported by numerous researchers, results in more high-quality target sites per grid.

Publications using C-flat™:

Does contamination buildup limit through put for automated cryoEM? , Journal of Structural Biology, Volume 154, Issue 3, June 2006, Pages 303-311 Anchi Cheng, Denis Fellmann, James Pulokas, Clinton S. Potter and Bridget Carragher

Automated cryoEM data acquisition and analysis of 284 742 particles of GroEL , Journal of Structural Biology, In Press, Uncorrected Proof, Available online 22 May 2006, Scott M. Stagg, Gabriel C. Lander, James Pulokas, Denis Fellmann, Anchi Cheng, Joel D. Quispe, Satya P. Mallick, Radomir M. Avila, Bridget Carragher and Clinton S. Potter

Product Line

C-flat™ is a holey carbon film supported by a standard TEM grid. C-flat™ products are fully specified by 4 parameters: the hole diameter and pitch of the holey carbon film and the material type and mesh size of the TEM grid. The following image illustrates these parameters:

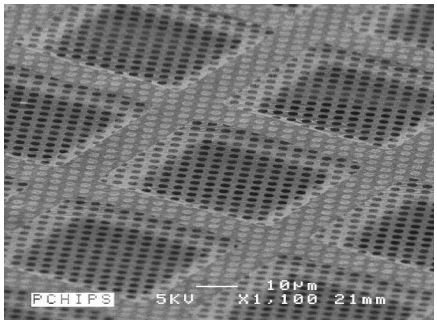
Standard Products

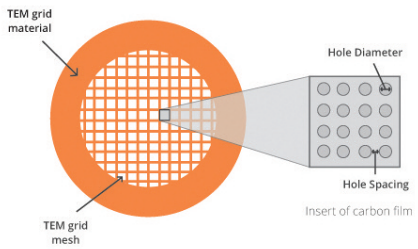
The breadth of applications in cryoTEM necessitate a wide range of holey carbon film patterns. And now, with the recent expansion of the product line, a C-flat™ holey carbon film is available for almost any application. Whether 600nm holes are needed for very high magnifications with ultra-high resolution cameras or large open areas are needed for larger specimens, C-flat™ is the perfect holey carbon grid.

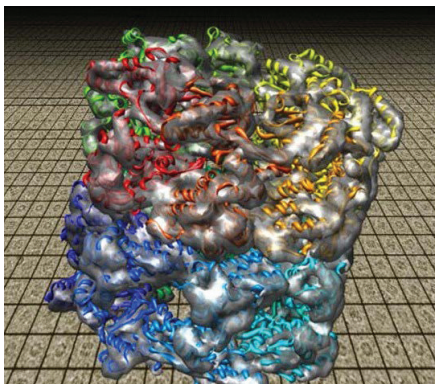
C-flat™ is immediately available in several standard array patterns including hole diameters/hole spacings of 0.6/2, 1/1, 1/2, 1/4, 1.2/1.3, 2/1, 2/2, 2/4, 4/2, and a multihole pattern. C-flat™ is supported by your choice of a 200 mesh or 400 mesh copper TEM grid and sold in quantities of 25, 50, or 100.

Thick Products

C-Flat™ is available in a thick option that doubles the carbon thickness from approximately 20nm to 40nm. Thick C-flat product numbers end in -T, catalog numbers contain “CFT”. Available in quantities of 50 and 100 per pack.







250,000 particles of GroEL in 24 hours.
Image Courtesy of Scott Stagg and Mike Pique NRAMM, The Scripps Research Institute (data acquired on CF-2/2-4C)

Articles

An improved holey carbon film for cryo-electron microscopy. Quispe J, Damiano J, Mick SE, Nackashi DP, Fellmann D, Ajero TG, Carragher B, Potter CS, (2007). Microscopy and microanalysis, 13(5), 365-371.

Improving the technique of vitreous cryo-sectioning for cryo-electron tomography: electrostatic charging for section attachment and implementation of an anti-contamination glove box.
Pierson J, Fernández JJ, Bos E, Amini S, Gnaegi H, Vos M, Bel B, Adolfsen F, Carrascosa JL, Peters PJ., J Struct Biol. 2010 Feb;169(2): 219-25. Epub 2009 Oct 12.

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Cryo Preparation Using C-flat™

Product Overview

C-flat™ is a holey carbon support film, manufactured using a patent pending semiconductor-based technology without plastics, resists or other soft materials. As a result, the carbon films are flat, uniform and free of residues or plastics. C-flat™ is designed to be an "out of the box" solution, and should require minimal sample preparation. Extensive plasma cleaning is not needed, and could potentially thin the carbon, making it too fragile for blotting or freezing.

Plasma Preparation

If you are using C-flat™ for the first time, it is recommended that no plasma preparation be used initially. As with any carbon film, plasma preparation is sometimes necessary to make the surface more hydrophilic. If your initial results dictate making the films more hydrophilic, below are some guidelines for preparation using several common systems.

Fischione Model 1020

- 25% Oxygen/75% Argon
- Use 5 grid holder and dampening shield
- Plasma clean grids for 10-30 seconds

Note: It is recommended that the dampening shield be used when cleaning C-flat™ using the Fischione Model 1020 plasma cleaner. The shield will dampen the effect of the plasma, reducing the erosion rate of the carbon while allowing the film to become more hydrophilic.

Gatan Solarus™

- 25% Oxygen/75% Argon
- Place grids on a support (e.g. glass slide)
- Set slide in the bottom of the chamber
- Set RF power to 25 watts
- Plasma clean grids for 10-20 seconds

Glow Discharge

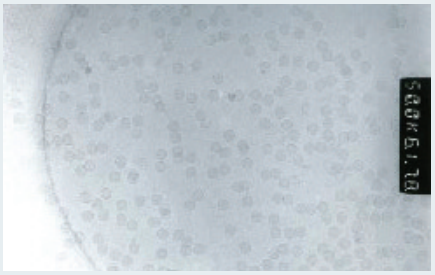
These systems vary widely depending on the manufacturer. Typically, keep the glow from the plasma dim and the clean time approximately 10-30 seconds.

Plunge Freezing

Recommended settings for plunge freezing with the Vitrobot™

- **Temperature:** 4°C
- **Humidity:** 100% (can vary between 90–100%)
- **Blot Time:** 3-5 seconds
- **Volume on Grid:** 3µL (can vary)
- **Drain Time:** 0 seconds
- **Offset:** 0 for regular samples, –1 for viscous

When using the Vitrobot™, it is recommended that the filter paper be changed regularly (generally after freezing 4-5 grids or 10 minutes, whichever comes first.) The filter paper can become saturated in the high humidity environment of the chamber.



Frozen-Hydrated Bacteriophange Capsid
(data acquired on CF-1.2/1.3-4C)

Working with Viscous Samples

Generally, lowering the volume of solution on the grid can help to eliminate the need for multiple blots, which can damage the carbon film. As little as 1µL of solution can cover a 3mm grid area if the pipette tip is used to spread the drop, but reducing the volume to 1.5 or 2.0µL will help as well. Once the sample is on the grid, it should be blotted within a few minutes before further evaporation occurs. If a Vitrobot™ is used, changing the offset from 0mm to -1 or -2mm can also help.

Hydrophilicity/Hydrophobicity

Increasing the hydrophilicity of the carbon film will help a droplet spread evenly over the carbon, rather than pool on the surface. The most common method for achieving this is by plasma or glow discharge; recommended settings for various equipment are given. Keep in mind that C-flat™ is manufactured without any plastics or soft materials in the process, therefore plasma or glow discharge steps are only needed to make the surface more hydrophilic, not to clean. For this reason, a lower power and time is generally used.

Adding Carbon to C-flat™

Many C-flat™ parts are now offered in both the standard as well as a thicker carbon film, designed to give each lab the option to choose not only the most appropriate hole geometry and size, but also the ideal carbon thickness for their application. In addition, carbon can be added to C-flat™ either to thicken the existing hole pattern, or as a thin continuous overlay across the hole pattern. Overlays are often used when particles have a strong affinity towards the carbon material.

Keeping the Carbon Intact

C-flat™ is designed to be an "out of the box" solution. Extensive sample preparation steps are generally not required, and often carbon that is torn or broken is a sign of plasma cleaning that is too long and/or at too high a power setting. Please refer to the suggestions on plasma cleaner settings, as well as on working with viscous samples.

Publications using C-flat™:

Near-atomic resolution using electron cryomicroscopy and single-particle reconstruction. Proceedings of the National Academy of Sciences, Volume 105, Number 6, pp. 1867-1872, 2008. X. Zhang, E. Settembre, C. Xu, P. R. Dormitzer, R. Bellamy, S. C. Harrison, and N. Grigorieff

Preparation of macromolecular complexes for cryo-electron microscopy. Nature Protocols, Volume 2, pp. 3239 - 3246, 2007. R. A. Grassucci, D. J. Taylor, and J. Frank

Segrosome structure revealed by a complex of ParR with centromere DNA. Nature, Volume 450, pp. 1268-1271, 2007. M. A. Schumacher, T. C. Glover, A. J. Brzoska, S. O. Jensen, T. D. Dunham, R. A. Skurray and N. Firth

Automation of random canonical tilt and orthogonal tilt data collection using feature-based correlation. Journal of Structural Biology, Volume 159, Issue 3, pp. 335-346, September 2007. C. Yoshioka, J. Pulokas, D. Fellmann, C. S. Potter, R. A. Milligan and B. Carragher

Automated cryoEM data acquisition and analysis of 284 742 particles of GroEL. Journal of Structural Biology, Volume 155, Issue 3, pp. 470-481, September 2006. S. M. Stagg, G. C. Lander, J. Pulokas, D.s Fellmann, A. Cheng, J. D. Quispe, S. P. Mallick, R. M. Avila, B. Carragher and C. S. Potter

Contamination buildup limit throughput for automated cryoEM? Journal of Structural Biology, Volume 154, Issue 3, pp. 303-311, June 2006. A. Cheng, D. Fellmann, J. Pulokas, C. S. Potter and B. Carragher

Plunging Tweezers for the CP3 (Cryoplunge™3)

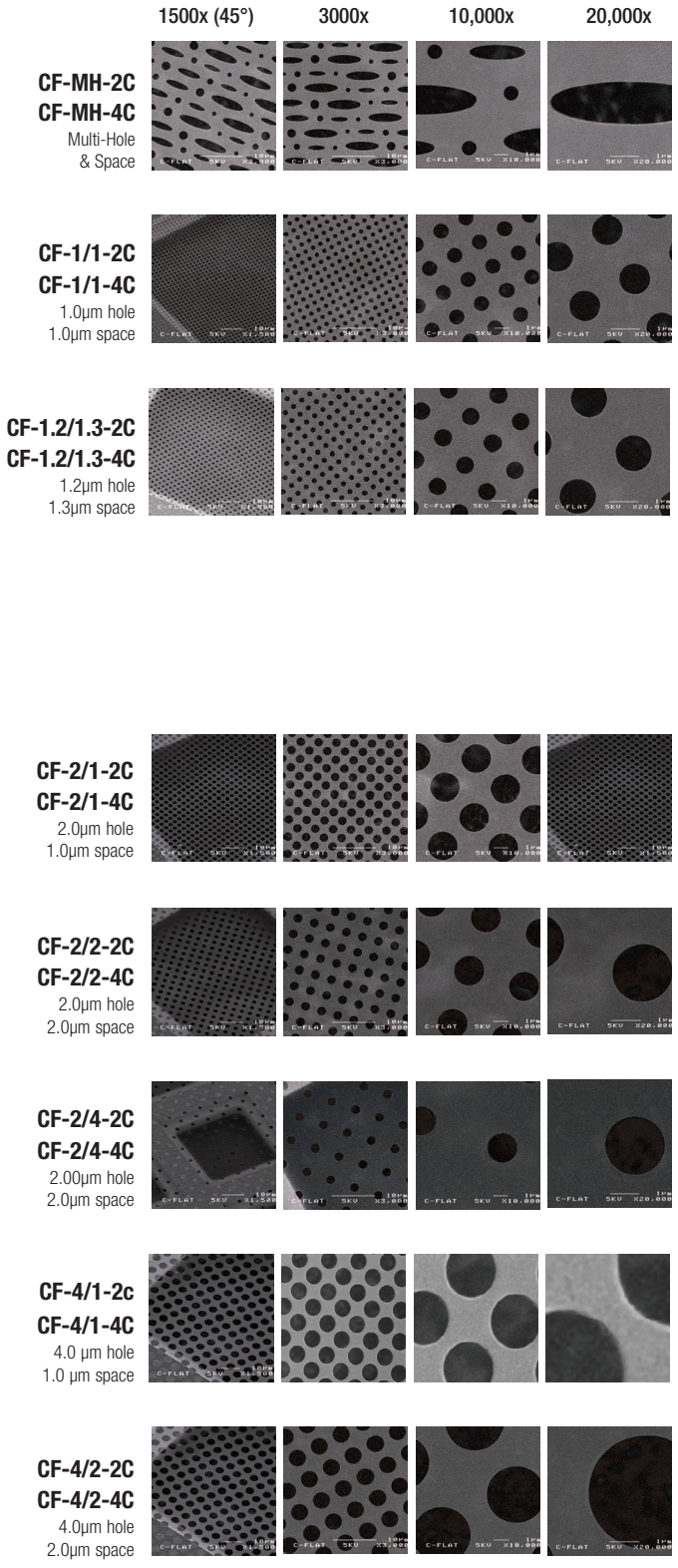
Custom tweezers specifically made to fit the Gatan Cryoplunge™ an instrument used in the preparation of frozen hydrated specimens for cryoEM.

CP3690	Plunging Tweezers	each

TEM SUPPORT FILMS

Ordering Information:

C-flat™ mounted on a stub using carbon tape and imaged with a Field Emission Scanning Electron Microscope



C-flat™ Holey Carbon Grids for TEM - Copper Only

Product Code	Cat. #	Hole Size	Hole Spacing	TEM Mesh	TEM Grid	Qty.
CF-1.2/1.3-2C	**CF213-25**	1.2 µm	1.3 µm	200	Cu	25/pk.
	CF213-50	1.2 µm	1.3 µm	200	Cu	50/pk.
	CF213-100	1.2 µm	1.3 µm	200	Cu	100/pk.
CF-1.2/1.3-3C	**CF313-25**	1.2 µm	1.3 µm	300	Cu	25/pk.
	CF313-50	1.2 µm	1.3 µm	300	Cu	50/pk.
	CF313-100	1.2 µm	1.3 µm	300	Cu	100/pk.
CF-1.2/1.3-4C	**CF413-25**	1.2 µm	1.3 µm	400	Cu	25/pk.
	CF413-50	1.2 µm	1.3 µm	400	Cu	50/pk.
	CF413-100	1.2 µm	1.3 µm	400	Cu	100/pk.
CF-2/1-2C	**CF212-25**	2.0 µm	1.0 µm	200	Cu	25/pk.
	CF212-50	2.0 µm	1.0 µm	200	Cu	50/pk.
	CF212-100	2.0 µm	1.0 µm	200	Cu	100/pk.
CF-2/1-3C	**CF312-25**	2.0 µm	1.0 µm	300	Cu	25/pk.
	CF312-50	2.0 µm	1.0 µm	300	Cu	50/pk.
	CF312-100	2.0 µm	1.0 µm	300	Cu	100/pk.
CF-2/1-4C	**CF412-25**	2.0 µm	1.0 µm	400	Cu	25/pk.
	CF412-50	2.0 µm	1.0 µm	400	Cu	50/pk.
	CF412-100	2.0 µm	1.0 µm	400	Cu	100/pk.
CF-2/2-2C	**CF-222C-25**	2.0 µm	2.0 µm	200	Cu	25/pk.
	CF-222C-50	2.0 µm	2.0 µm	200	Cu	50/pk.
	CF-222C-100	2.0 µm	2.0 µm	200	Cu	100/pk.
CF-2/2-3C	**CF-322C-25**	2.0 µm	2.0 µm	300	Cu	25/pk.
	CF-322C-50	2.0 µm	2.0 µm	300	Cu	50/pk.
	CF-322C-100	2.0 µm	2.0 µm	300	Cu	100/pk.
CF-2/2-4C	**CF-224C-25**	2.0 µm	2.0 µm	400	Cu	25/pk.
	CF-224C-50	2.0 µm	2.0 µm	400	Cu	50/pk.
	CF-224C-100	2.0 µm	2.0 µm	400	Cu	100/pk.
CF-2/4-2C	**CF242-25**	2.0 µm	4.0 µm	200	Cu	25/pk.
	CF242-50	2.0 µm	4.0 µm	200	Cu	50/pk.
	CF242-100	2.0 µm	4.0 µm	200	Cu	100/pk.
CF-2/4-3C	**CF342-25**	2.0 µm	4.0 µm	300	Cu	25/pk.
	CF342-50	2.0 µm	4.0 µm	300	Cu	50/pk.
	CF342-100	2.0 µm	4.0 µm	300	Cu	100/pk.
CF-2/4-4C	**CF442-25**	2.0 µm	4.0 µm	400	Cu	25/pk.
	CF442-50	2.0 µm	4.0 µm	400	Cu	50/pk.
	CF442-100	2.0 µm	4.0 µm	400	Cu	100/pk.
CF-4/2-2C	**CF422-25**	4.0 µm	2.0 µm	200	Cu	25/pk.
	CF422-50	4.0 µm	2.0 µm	200	Cu	50/pk.
	CF422-100	4.0 µm	2.0 µm	200	Cu	100/pk.
CF-4/2-3C	**CF423-25**	4.0 µm	2.0 µm	300	Cu	25/pk.
	CF423-50	4.0 µm	2.0 µm	300	Cu	50/pk.
	CF423-100	4.0 µm	2.0 µm	300	Cu	100/pk.
CF-4/2-4C	**CF424-25**	4.0 µm	2.0 µm	400	Cu	25/pk.
	CF424-50	4.0 µm	2.0 µm	400	Cu	50/pk.
	CF424-100	4.0 µm	2.0 µm	400	Cu	100/pk.
CF-MH-2C	**CF2MH-25**	Multihole*		200	Cu	25/pk.
	CF2MH-50	Multihole*		200	Cu	50/pk.
	CF2MH-100	Multihole*		200	Cu	100/pk.
CF-MH-3C	**CF3MH-25**	Multihole*		300	Cu	25/pk.
	CF3MH-50	Multihole*		300	Cu	50/pk.
	CF3MH-100	Multihole*		300	Cu	100/pk.
CF-MH-4C	**CF4MH-25**	Multihole*		400	Cu	25/pk.
	CF4MH-50	Multihole*		400	Cu	50/pk.
	CF4MH-100	Multihole*		400	Cu	100/pk
CF-1/1-2C	**CF21-25**	1.0 µm	1.0 µm	200	Cu	25/pk.
CF-1/1-3C	**CF31-25**	1.0 µm	1.0 µm	300	Cu	25/pk.
	CF31-50	1.0 µm	1.0 µm	300	Cu	50/pk.
	CF31-100	1.0 µm	1.0 µm	300	Cu	100/pk.
CF-1/1-4C	**CF41-25**	1.0 µm	1.0 µm	400	Cu	25/pk.
	CF41-50	1.0 µm	1.0 µm	400	Cu	50/pk.
	CF41-100	1.0 µm	1.0 µm	400	Cu	100/pk.

The Multihole device has a staggered pattern of six features consisting of three circle patterns of 1 micron, 1.4 micron and 2 micron diameter and three ellipse patterns of 1 x 4 microns, 1.4 x 5.6 microns and 2 x 8 microns.

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C-flat™ Holey Thick Carbon Grids for TEM - Copper Only

C-Flat™ is now available in a new thick version that doubles the carbon thickness from approximately 20nm to 40nm.

Product Code	Cat. #	Hole Size	Hole Spacing	TEM Mesh	TEM Grid	Qty.
CF-1.2/1.3-2C-T	**CFT213-50**	1.2 µm	1.3 µm	200	Cu	50/pk.
	CFT213-100	1.2 µm	1.3 µm	200	Cu	100/pk.
CF-1.2/1.3-3C-T	**CFT313-50**	1.2 µm	1.3 µm	300	Cu	50/pk.
	CFT313-100	1.2 µm	1.3 µm	300	Cu	100/pk.
CF-1.2/1.3-4C-T	**CFT413-50**	1.2 µm	1.3 µm	400	Cu	50/pk.
	CFT413-100	1.2 µm	1.3 µm	400	Cu	100/pk.
CF-2/1-2C-T	**CFT212-50**	2.0 µm	1.0 µm	200	Cu	50/pk.
	CFT212-100	2.0 µm	1.0 µm	200	Cu	100/pk.
CF-2/1-3C-T	**CFT312-50**	2.0 µm	1.0 µm	300	Cu	50/pk.
	CFT312-100	2.0 µm	1.0 µm	300	Cu	100/pk.
CF-2/1-4C-T	**CFT412-50**	2.0 µm	1.0 µm	400	Cu	50/pk.
	CFT412-100	2.0 µm	1.0 µm	400	Cu	100/pk.
CF-2/2-2C-T	**CFT-222C-50**	2.0 µm	2.0 µm	200	Cu	50/pk.
	CFT-222C-100	2.0 µm	2.0 µm	200	Cu	100/pk.
CF-2/2-3C-T	**CFT-223C-50**	2.0 µm	2.0 µm	300	Cu	50/pk.
	CFT-223C-100	2.0 µm	2.0 µm	300	Cu	100/pk.
CF-2/2-4C-T	**CFT-224C-50**	2.0 µm	2.0 µm	400	Cu	50/pk.
	CFT-224C-100	2.0 µm	2.0 µm	400	Cu	100/pk.
CF-2/4-2C-T	**CFT242-50**	2.0 µm	4.0 µm	200	Cu	50/pk.
	CFT242-100	2.0 µm	4.0 µm	200	Cu	100/pk.
CF-2/4-3C-T	**CFT342-50**	2.0 µm	4.0 µm	300	Cu	50/pk.
	CFT342-100	2.0 µm	4.0 µm	300	Cu	100/pk.
CF-2/4-4C-T	**CFT442-50**	2.0 µm	4.0 µm	400	Cu	50/pk.
	CFT442-100	2.0 µm	4.0 µm	400	Cu	100/pk.
CF-4/1-2C-T	**CFT241-100**	4.0 µm	1.0 µm	200	Cu	100/pk
CF-4/2-2C-T	**CFT422-50**	4.0 µm	2.0 µm	200	Cu	50/pk.
	CFT422-100	4.0 µm	2.0 µm	200	Cu	100/pk.
CF-4/2-3C-T	**CFT423-50**	4.0 µm	2.0 µm	300	Cu	50/pk.
	CFT423-100	4.0 µm	2.0 µm	300	Cu	100/pk.
CF-4/2-4C-T	**CFT424-50**	4.0 µm	2.0 µm	400	Cu	50/pk.
	CFT424-100	4.0 µm	2.0 µm	400	Cu	100/pk.
CF-MH-2C-T	**CFT2MH-50**	Multihole*		200	Cu	50/pk.
	CFT2MH-100	Multihole*		200	Cu	100/pk.
CF-MH-3C-T	**CFT3MH-50**	Multihole*		300	Cu	50/pk.
	CFT3MH-100	Multihole*		300	Cu	100/pk.
CF-MH-4C-T	**CFT4MH-50**	Multihole*		400	Cu	50/pk.
	CFT4MH-100	Multihole*		400	Cu	100/pk
CF-1/1-2C-T	**CFT21-100**	1.0 µm	1.0 µm	200	Cu	100/pk.
CF-1/1-3C-T	**CFT31-100**	1.0 µm	1.0 µm	300	Cu	100/pk.
CF-1/1-4C-T	**CFT41-100**	1.0 µm	1.0 µm	400	Cu	100/pk.

The Multihole device has a staggered pattern of six features consisting of three circle patterns of 1 micron, 1.4 micron and 2 micron diameter and three ellipse patterns of 1 x 4 microns, 1.4 x 5.6 microns and 2 x 8 microns.

C-flat™ Holey Carbon Grids for TEM - Gold Only

C-Flat™ is also available on gold grids.

Product Code	Cat. #	Hole Size	Hole Spacing	TEM Mesh	TEM Grid	Qty.
CF-1/1-2Au	**CF21-100-Au**	1.0 µm	1.0 µm	200	Au	100/pk.
CF-1.2/1.3-2Au	**CF213-100-Au**	1.2 µm	1.3 µm	200	Au	100/pk.
CF-1.2/1.3-3Au	**CF313-100-Au**	1.2 µm	1.3 µm	300	Au	100/pk.
CF-1.2/1.3-4Au	**CF413-100-Au**	1.2 µm	1.3 µm	400	Au	100/pk.
CF-2/1-2Au	**CF212-100-Au**	2.0 µm	1.0 µm	200	Au	100/pk.
CF-2/1-3Au	**CF312-100-Au**	2.0 µm	1.0 µm	300	Au	100/pk.
CF-2/1-4Au	**CF412-100-Au**	2.0 µm	1.0 µm	400	Au	100/pk.
CF-2/2-2Au	**CF222C-100-Au**	2.0 µm	2.0 µm	200	Au	100/pk.
CF-2/2-3Au	**CF223C-100-Au**	2.0 µm	2.0 µm	300	Au	100/pk.
CF-2/2-4Au	**CF224C-100-Au**	2.0 µm	2.0 µm	400	Au	100/pk.
CF-2/4-2Au	**CF242-100-Au**	2.0 µm	4.0 µm	200	Au	100/pk.
CF-2/4-3Au	**CF342-100-Au**	2.0 µm	4.0 µm	300	Au	100/pk.
CF-2/4-4Au	**CF442-100-Au**	2.0 µm	4.0 µm	400	Au	100/pk.
CF-4/1-2Au	**CF241-100-Au**	4.0 µm	1.0 µm	200	Au	100/pk.
CF-4/2-2Au	**CF422-100-Au**	4.0 µm	2.0 µm	200	Au	100/pk.
CF-4/2-3Au	**CF423-100-Au**	4.0 µm	2.0 µm	300	Au	100/pk.
CF-4/2-4Au	**CF424-100-Au**	4.0 µm	2.0 µm	400	Au	100/pk.
CF-MH-2Au	**CF2MH-100-Au**	Multihole*		200	Au	100/pk.
CF-MH-3Au	**CF3MH-100-Au**	Multihole*		300	Au	100/pk.
CF-MH-4Au	**CF4MH-100-Au**	Multihole*		400	Au	100/pk.

The Multihole device has a staggered pattern of six features consisting of three circle patterns of 1 micron, 1.4 micron and 2 micron diameter and three ellipse patterns of 1 x 4 microns, 1.4 x 5.6 microns and 2 x 8 microns.

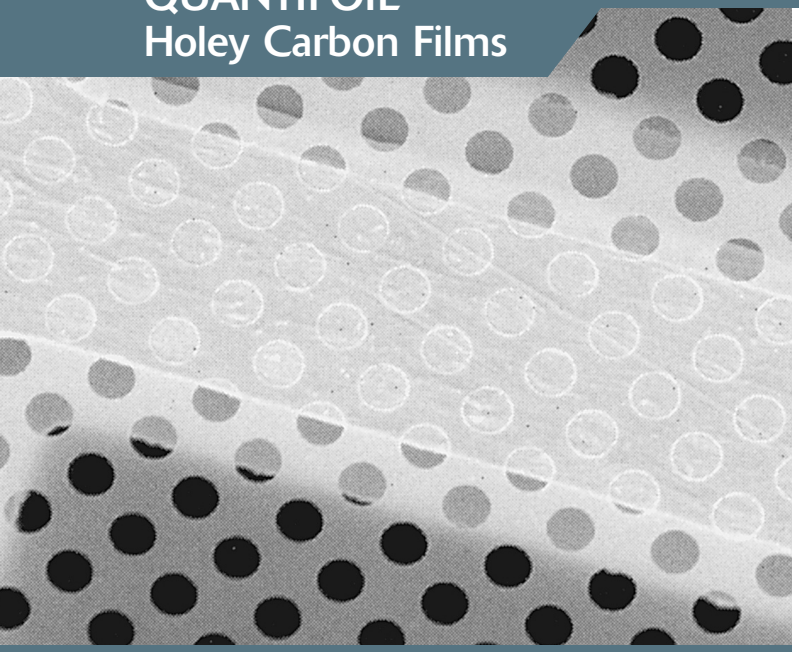
C-flat™ Customization

We realize that each customer has unique needs since specimens vary greatly in composition and size. To meet the diverse and demanding needs of the cryoTEM community, C-flat™ can be customized to meet a user's specific requirements. For example, C-flat™ can be manufactured on other grid types such as Gold grids, 100 x 400 mesh grids, or London Finder grids. The size, shape and spacing of the holes perforating the carbon film can also be customized. For examples, those using electron tomography techniques might desire a larger hole size to allow for increased tilt angles; those using very high magnifications might find a smaller hole size desirable; 2D crystallographers might prefer a a sparse hole pattern to take advantage of the clean and ultra flat surface of C-flat™; and based upon the specimen preparation and imaging protocols, grid metals other than copper might be required.

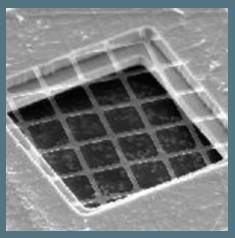
C-flat™ can be customized to meet all of these needs.

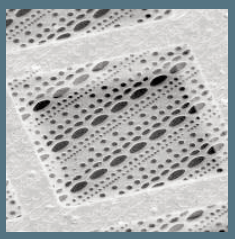
Please contact EMS with any custom C-flat™ requests. We will be glad to provide you with a quote for specialized C-flat™ grids. Requests for customized parts can be made directly to EMS via e-mail to info@emsdiasum.com

QUANTIFOIL®
Holey Carbon Films



OVERVIEW





QUANTIFOIL® is a perforated support foil with pre-defined hole size, shape and arrangement. It has advantages in electron microscopy (EM) or low-energy electron point source (LEEPS) microscopy when compared with conventional holey film.

QUANTIFOIL® is offered with circular and square, orthogonal arranged holes. Films with different hole sizes and bar widths are available. Carbon is the standard material that makes the foil.

QUANTIFOIL® is a superior quality of holey carbon film, which facilitates the use of automation in TEM. (e.g. The National Resource for Automated Molecular Microscopy, at the Scripps Research Institute, has developed a system, called Leginon, for automatically acquiring images from a transmission electron microscope).

The surface properties of QUANTIFOIL® holey carbon support film, especially the wetting properties, may have to be adapted according to one's particular requirements. Untreated aging QUANTIFOIL® tends to be hydrophobic. Hydrophillicity of the foil can be achieved by glow discharging in residual air or by metal coating.

QUANTIFOIL® in low-energy electron point source (LEEPS) microscopy. QUANTIFOIL® with a regular pattern is required in order to be able to distinguish an object, which is spanned over a hole. An object cannot be discriminated from the support in the case of conventional holey support film. (H.W. Fink & C. Schonenberger, University of Basel, used QUANTIFOIL® for the measurement of electrical current through DNA molecules.)

The foil is ~12 nm thick and mounted on either copper, nickel or gold grids with either square or round holes of different sizes.

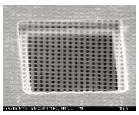
Holey films with 2µ round holes are used at magnifications between 30,000x and 40,000x.

III QUANTIFOIL® with Circular Holes

QUANTIFOIL® with circular holes is used in cryoelectron tomographic reconstruction. The roundness of the holes is advantageous with respect to the formation of an ice layer of constant thickness. The hole size chosen depends on the magnification used, and on whether or not one wishes to include support film in the image. Assessment of the image quality is easier when foil is included in the picture, because the power spectrum of a foil is stronger than that of unsupported ice.

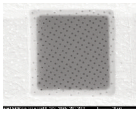
QUANTIFOIL® type	Hole size in µm	Spacing in µm	Period in µm
R 0.6/1	0.6	1.0	1.6
R 1/2	1.0	2.0	3.0
R 1/4	1.0	4.0	5.0
R 1.2/1.3	1.2	1.3	2.5
R 1.2/20	1.2	20.0	21.2
R 2/1	2.0	1.0	3.0
R 2/2	2.0	2.0	4.0
R 2/4	2.0	4.0	6.0
R 3/3	3.0	3.0	6.0
R 3/5	3.0	5.0	8.0
R 3.5/1	3.5	1.0	4.5
R 5/10	5.0	10.0	15.0
R 5/20	5.0	20.0	25.0
R 6/6.5	6.0	6.5	12.5
R 6/100	6.0	100.0	106.0
R 10/5	10.0	5.0	15.0
R 10/10	10.0	10.0	20.0
R 10/20	10.0	20.0	30.0
R 17/5	17.5	5.0	22.5

QUANTIFOIL® R 0.6/1 Hole size is 0.6µ. Space between holes is 1µ. Center to center is 1.6µ (hole size may be as large as 1µ).



Grid Type	Hole Size	Period	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	0.6µm	1.6µm	Q210CR-06	Q310CR-06	Q410CR-06	10/pk
			Q220CR-06	Q320CR-06	Q420CR-06	25/pk
			Q225CR-06	Q325CR-06	Q425CR-06	50/pk
			Q250CR-06	Q350CR-06	Q450CR-06	100/pk
Nickel	0.6µm	1.6µm	Q210NR-06	Q310NR-06	Q410NR-06	10/pk
			Q220NR-06	Q320NR-06	Q420NR-06	25/pk
			Q225NR-06	Q325NR-06	Q425NR-06	50/pk
			Q250NR-06	Q350NR-06	Q450NR-06	100/pk
Gold	0.6µm	1.6µm	Q210AR-06	Q310AR-06	Q410AR-06	10/pk
			Q220AR-06	Q320AR-06	Q420AR-06	25/pk
			Q225AR-06	Q325AR-06	Q425AR-06	50/pk
			Q250AR-06	Q350AR-06	Q450AR-06	100/pk

QUANTIFOIL® R 1/2 Hole size is 1µ. Space between holes is 2µ. Center to center is 3µ



Grid Type	Hole Size	Period	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	1µm	3µm	Q210CR-12	Q310CR-12	Q410CR-12	10/pk
			Q225CR-12	Q325CR-12	Q425CR-12	25/pk
			Q250CR-12	Q350CR-12	Q450CR-12	50/pk
			Q2100CR-12	Q3100CR-12	Q4100CR-12	100/pk
Nickel	1µm	3µm	Q210NR-12	Q310NR-12	Q410NR-12	10/pk
			Q225NR-12	Q325NR-12	Q425NR-12	25/pk
			Q250NR-12	Q350NR-12	Q450NR-12	50/pk
			Q2100NR-12	Q3100NR-12	Q4100NR-12	100/pk
Gold	1µm	3µm	Q210AR-12	Q310AR-12	Q410AR-12	10/pk
			Q225AR-12	Q325AR-12	Q425AR-12	25/pk
			Q250AR-12	Q350AR-12	Q450AR-12	50/pk
			Q2100AR-12	Q3100AR-12	Q4100AR-12	100/pk

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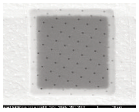
QUANTIFOIL® Holey Carbon Films (continued)

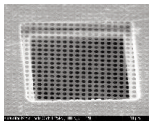
III QUANTIFOIL® with Circular Holes (continued)

QUANTIFOIL® R 1/4 may be preferred over R 1.2/1.3, when an increased tolerance with respect to the position of beam, and a larger beam diameter are desired, such as in the case of automated image acquisition.



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	**Q210CR-14**	**Q310CR-14**	**Q410CR-14**	10/pk
Hole Size: 1µm	**Q220CR-14**	**Q320CR-14**	**Q420CR-14**	25/pk
Period: 5µm	**Q225CR-14**	**Q325CR-14**	**Q425CR-14**	50/pk
	Q250CR-14	**Q350CR-14**	**Q450CR-14**	100/pk
Nickel	**Q210NR-14**	**Q310NR-14**	**Q410NR-14**	10/pk
Hole Size: 1µm	**Q220NR-14**	**Q320NR-14**	**Q420NR-14**	25/pk
Period: 5µm	**Q225NR-14**	**Q325NR-14**	**Q425NR-14**	50/pk
	Q250NR-14	**Q350NR-14**	**Q450NR-14**	100/pk
Gold	**Q210AR-14**	**Q310AR-14**	**Q410AR-14**	10/pk
Hole Size: 1µm	**Q220AR-14**	**Q320AR-14**	**Q420AR-14**	25/pk
Period: 5µm	**Q225AR-14**	**Q325AR-14**	**Q425AR-14**	50/pk
	Q250AR-14	**Q350AR-14**	**Q450AR-14**	100/pk

QUANTIFOIL® R 1.2/1.3 A foil with ~1.2 µm circular holes and a spacing of ~1.3µm between the holes. This type is used at magnifications around 50,000x.

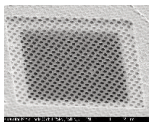


Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	**Q210CR1.3**	**Q310CR1.3**	**Q410CR1.3**	10/pk
Hole Size: ~1.2µm	**Q225-CR1.3**	**Q325CR1.3**	**Q425CR1.3**	25/pk
Period: 2.5µm	**Q250-CR1.3**	**Q350CR1.3**	**Q450CR1.3**	50/pk
	Q2100CR1.3	**Q3100CR1.3**	**Q4100CR1.3**	100/pk
Nickel	**Q210NR1.3**	**Q310NR1.3**	**Q410NR1.3**	10/pk
Hole Size: ~1.2µm	**Q225NR-1.3**	**Q325NR1.3**	**Q425NR1.3**	25/pk
Period: 2.5µm	**Q250-NI1.3**	**Q350NR1.3**	**Q450NR1.3**	50/pk
	Q2100NR1.3	**Q3100NR1.3**	**Q4100NR1.3**	100/pk
Gold	**Q210AR1.3**	**Q310AR1.3**	**Q410AR1.3**	10/pk
Hole Size: ~1.2µm	**Q225AR1.3**	**Q325AR1.3**	**Q425AR1.3**	25/pk
Period: 2.5µm	**Q250AR1.3**	**Q350AR1.3**	**Q450AR1.3**	50/pk
	Q2100AR1.3	**Q3100AR1.3**	**Q4100AR1.3**	100/pk
NEW...QUANTIFOIL® R 1.2/1.3 with Ultrathin Carbon				
Copper	**Q210CR1.3-2nm**	**Q310CR1.3-2nm**	**Q410CR1.3-2nm**	10/pk
Hole Size: ~1.2µm	**Q225CR1.3-2nm**	**Q325CR1.3-2nm**	**Q425CR1.3-2nm**	25/pk
Period: 2.5µm	**Q250CR1.3-2nm**	**Q350CR1.3-2nm**	**Q450CR1.3-2nm**	50/pk
	Q2100CR1.3-2nm	**Q3100CR1.3-2nm**	**Q4100CR1.3-2nm**	100/pk
Gold	**Q210AR1.3-2nm**	**Q310AR1.3-2nm**	**Q410AR1.3-2nm**	10/pk
Hole Size: ~1.2µm	**Q225AR1.3-2nm**	**Q325AR1.3-2nm**	**Q425AR1.3-2nm**	25/pk
Period: 2.5µm	**Q250AR1.3-2nm**	**Q350AR1.3-2nm**	**Q450AR1.3-2nm**	50/pk
	Q2100AR1.3-2nm	**Q3100AR1.3-2nm**	**Q4100AR1.3-2nm**	100/pk

QUANTIFOIL® R 1.2/20 Hole size is 1.2µ. Space between holes is 20µ. Center to center is 21.2µ.

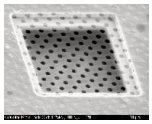
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	**Q210CR21.2**	**Q310CR21.2**	**Q410CR21.2**	10/pk
Hole Size: 1.2µm	**Q225CR21.2**	**Q325CR21.2**	**Q425CR21.2**	25/pk
Period: 21.2µm	**Q250CR21.2**	**Q350CR21.2**	**Q450CR21.2**	50/pk
	Q2100CR21.2	**Q3100CR21.2**	**Q4100CR21.2**	100/pk
Nickel	**Q210NR21.2**	**Q310NR21.2**	**Q410NR21.2**	10/pk
Hole Size: 1.2µm	**Q225NR21.2**	**Q325NR21.2**	**Q425NR21.2**	25/pk
Period: 21.2µm	**Q250NR21.2**	**Q350NR21.2**	**Q450NR21.2**	50/pk
	Q2100NR21.2	**Q3100NR21.2**	**Q4100NR21.2**	100/pk
Gold	**Q210AR21.2**	**Q310AR21.2**	**Q410AR21.2**	10/pk
Hole Size: 1.2µm	**Q225AR21.2**	**Q325AR21.2**	**Q425AR21.2**	25/pk
Period: 21.2µm	**Q250AR21.2**	**Q350AR21.2**	**Q450AR21.2**	50/pk
	Q2100AR21.2	**Q3100AR21.2**	**Q4100AR21.2**	100/pk

QUANTIFOIL® R 2/1 has more open area than R 2/2. It is used when focusing is carried out on the edge of a hole burnt in the ice in a neighboring hole instead of on the foil adjacent to the hole.



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	**Q210CR1**	**Q310CR1**	**Q410CR1**	10/pk
Hole Size: 1µm	**Q225CR1**	**Q325CR1**	**Q425CR1**	25/pk
Period: 3µm	**Q250CR1**	**Q350CR1**	**Q450CR1**	50/pk
	Q2100CR1	**Q3100CR1**	**Q4100CR1**	100/pk
Nickel	**Q210NR1**	**Q310NR1**	**Q410NR1**	10/pk
Hole Size: 1µm	**Q225NR1**	**Q325NR1**	**Q425NR1**	25/pk
Period: 3µm	**Q250NR1**	**Q350NR1**	**Q450NR1**	50/pk
	Q2100NR1	**Q3100NR1**	**Q4100NR1**	100/pk
Gold	**Q210AR1**	**Q310AR1**	**Q410AR1**	10/pk
Hole Size: 1µm	**Q225-AR1**	**Q325AR1**	**Q425AR1**	25/pk
Period: 3µm	**Q250-AR1**	**Q350AR1**	**Q450AR1**	50/pk
	Q2100AR1	**Q3100AR1**	**Q4100AR1**	100/pk
NEW...QUANTIFOIL® R 2/1 with Ultrathin Carbon				
Copper	**Q210CR1-2nm**	**Q310CR1-2nm**	**Q410CR1-2nm**	10/pk
Hole Size: 1µm	**Q225CR1-2nm**	**Q325CR1-2nm**	**Q425CR1-2nm**	25/pk
Period: 3µm	**Q250CR1-2nm**	**Q350CR1-2nm**	**Q450CR1-2nm**	50/pk
	Q2100CR1-2nm	**Q3100CR1-2nm**	**Q4100CR13-2nm**	100/pk
Gold	**Q210AR1-2nm**	**Q310AR1-2nm**	**Q410AR1-2nm**	10/pk
Hole Size: 1µm	**Q225AR1-2nm**	**Q325AR1-2nm**	**Q425AR1-2nm**	25/pk
Period: 3µm	**Q250AR1-2nm**	**Q350AR1-2nm**	**Q450AR1-2nm**	50/pk
	Q2100AR1-2nm	**Q3100AR1-2nm**	**Q4100AR1-2nm**	100/pk

QUANTIFOIL® R 2/2 Holey films with 2 µm circular holes are used at magnifications between 30,000x and 40,000x.



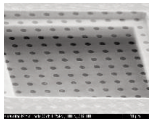
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	**Q210CR2**	**Q310CR2**	**Q410CR2**	10/pk
Hole Size: 2µm	**Q225-CR2**	**Q325CR2**	**Q425CR2**	25/pk
Period: 4µm	**Q250-CR2**	**Q350CR2**	**Q450CR2**	50/pk
	Q2100CR2	**Q3100CR2**	**Q4100CR2**	100/pk
Nickel	**Q210NR2**	**Q310NR2**	**Q410NR2**	10/pk
Hole Size: 2µm	**Q225-NR2**	**Q325NR2**	**Q425NR2**	25/pk
Period: 4µm	**Q250-NR2**	**Q350NR2**	**Q450NR2**	50/pk
	Q2100NR2	**Q3100NR2**	**Q4100NR2**	100/pk
Gold	**Q210AR2**	**Q310AR2**	**Q410AR2**	10/pk
Hole Size: 2µm	**Q225-AR2**	**Q325AR2**	**Q425AR2**	25/pk
Period: 4µm	**Q250-AR2**	**Q350AR2**	**Q450AR2**	50/pk
	Q2100AR2	**Q3100AR2**	**Q4100AR2**	100/pk
NEW...QUANTIFOIL® R 2/2 with Ultrathin Carbon				
Copper	**Q210CR2-2nm**	**Q310CR2-2nm**	**Q410CR2-2nm**	10/pk
Hole Size: 2µm	**Q225CR2-2nm**	**Q325CR2-2nm**	**Q425CR2-2nm**	25/pk
Period: 4µm	**Q250CR2-2nm**	**Q350CR2-2nm**	**Q450CR2-2nm**	50/pk
	Q2100CR2-2nm	**Q3100CR2-2nm**	**Q4100CR2-2nm**	100/pk
Gold	**Q210AR2-2nm**	**Q310AR2-2nm**	**Q410AR2-2nm**	10/pk
Hole Size: 2µm	**Q225AR2-2nm**	**Q325AR2-2nm**	**Q425AR2-2nm**	25/pk
Period: 4µm	**Q250AR2-2nm**	**Q350AR2-2nm**	**Q450AR2-2nm**	50/pk
	Q2100AR2-2nm	**Q3100AR2-2nm**	**Q4100AR2-2nm**	100/pk

TEM SUPPORT FILMS

QUANTIFOIL® Holey Carbon Films (continued)

III QUANTIFOIL® with Circular Holes (continued)

QUANTIFOIL® R 2/4 may be preferred over R 2/2, when an increased tolerance with respect to the position of beam, and a larger beam diameter are desired, such as in the case of automated image acquisition.

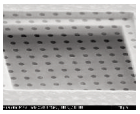


Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR-4	Q310CR-4	Q410CR-4	10/pk
Hole Size: 2µm	Q225-CR4	Q325CR-4	Q425CR-4	25/pk
Period: 6µm	Q250-CR4	Q350CR-4	Q450CR-4	50/pk
	Q2100CR-4	Q3100CR-4	Q4100CR-4	100/pk
Nickel	Q210NR-4	Q310NR-4	Q410NR-4	10/pk
Hole Size: 2µm	Q225-NR4	Q325NR-4	Q425NR-4	25/pk
Period: 6µm	Q250-NR4	Q350NR-4	Q450NR-4	50/pk
	Q2100NR-4	Q3100NR-4	Q4100NR-4	100/pk
Gold	Q210AR-4	Q310AR-4	Q410AR-4	10/pk
Hole Size: 2µm	Q225-AR4	Q325AR-4	Q425AR-4	25/pk
Period: 6µm	Q250-AR4	Q350AR-4	Q450AR-4	50/pk
	Q2100AR-4	Q3100AR-4	Q4100AR-4	100/pk
NEW...QUANTIFOIL® R 2/4 with Ultrathin Carbon				
Copper	Q210CR-4-2nm	Q310CR-4-2nm	Q410CR-4-2nm	10/pk
Hole Size: 2µm	Q225CR4-2nm	Q325CR-4-2nm	Q425CR-4-2nm	25/pk
Period: 6µm	Q250CR4-2nm	Q350CR-4-2nm	Q450CR-4-2nm	50/pk
	Q2100CR-4-2nm	Q3100CR-4-2nm	Q4100CR-4-2nm	100/pk
Gold	Q210AR-4-2nm	Q310AR-4-2nm	Q410AR-4-2nm	10/pk
Hole Size: 2µm	Q225AR4-2nm	Q325AR-4-2nm	Q425AR-4-2nm	25/pk
Period: 6µm	Q250AR4-2nm	Q350AR-4-2nm	Q450AR-4-2nm	50/pk
	Q2100AR-4-2nm	Q3100AR-4-2nm	Q4100AR-4-2nm	100/pk

QUANTIFOIL® R 3/3 Hole size is 3µ. Space between holes is 3µ. Center to center is 6µ.

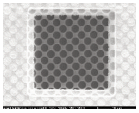
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR3	Q310CR3	Q410CR3	10/pk
Hole Size: 3µm	Q225CR3	Q325CR3	Q425CR3	25/pk
Period: 6µm	Q250CR3	Q350CR3	Q450CR3	50/pk
	Q2100CR3	Q3100CR3	Q4100CR3	100/pk
Nickel	Q210NR3	Q310NR3	Q410NR3	10/pk
Hole Size: 3µm	Q225NR3	Q325NR3	Q425NR3	25/pk
Period: 6µm	Q250NR3	Q350NR3	Q450NR3	50/pk
	Q2100NR3	Q3100NR3	Q4100NR3	100/pk
Gold	Q210AR3	Q310AR3	Q410AR3	10/pk
Hole Size: 3µm	Q225AR3	Q325AR3	Q425AR3	25/pk
Period: 6µm	Q250AR3	Q350AR3	Q450AR3	50/pk
	Q2100AR3	Q3100AR3	Q4100AR3	100/pk

QUANTIFOIL® R 3/5 Hole size is 3µ. Space between holes is 5µ. Center to center is 8µ.



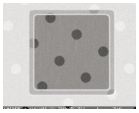
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR5	Q310CR5	Q410CR5	10/pk
Hole Size: 3µm	Q225CR5	Q325CR5	Q425CR5	25/pk
Period: 8µm	Q250CR5	Q350CR5	Q450CR5	50/pk
	Q2100CR5	Q3100CR5	Q4100CR5	100/pk
Nickel	Q210NR5	Q310NR5	Q410NR5	10/pk
Hole Size: 3µm	Q225NR5	Q325NR5	Q425NR5	25/pk
Period: 8µm	Q250NR5	Q350NR5	Q450NR5	50/pk
	Q2100NR5	Q3100NR5	Q4100NR5	100/pk
Gold	Q210AR5	Q310AR5	Q410AR5	10/pk
Hole Size: 3µm	Q225AR5	Q325AR5	Q425AR5	25/pk
Period: 8µm	Q250AR5	Q350AR5	Q450AR5	50/pk
	Q2100AR5	Q3100AR5	Q4100AR5	100/pk

QUANTIFOIL® R 3.5/1 may be preferred over foils with smaller holes if the carbon film should be outside the frame of the image. This option can be desirable in the case of extended objects, such as filamentous objects, for



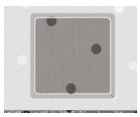
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR-35	Q310CR-35	Q410CR-35	10/pk
Hole Size: 3.5µm	Q220CR-35	Q320CR-35	Q420CR-35	25/pk
Period: 4.5µm	Q225CR-35	Q325CR-35	Q425CR-35	50/pk
	Q250CR-35	Q350CR-35	Q450CR-35	100/pk
Nickel	Q210NR-35	Q310NR-35	Q410NR-35	10/pk
Hole Size: 3.5µm	Q220NR-35	Q320NR-35	Q420NR-35	25/pk
Period: 4.5µm	Q225NR-35	Q325NR-35	Q425NR-35	50/pk
	Q250NR-35	Q350NR-35	Q450NR-35	100/pk
Gold	Q210AR-35	Q310AR-35	Q410AR-35	10/pk
Hole Size: 3.5µm	Q220AR-35	Q320AR-35	Q420AR-35	25/pk
Period: 4.5µm	Q225AR-35	Q325AR-35	Q425AR-35	50/pk
	Q250AR-35	Q350AR-35	Q450AR-35	100/pk

QUANTIFOIL® R 5/10 Hole size is 5µ. Space between holes is 10µ. Center to center is 15µ



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR510	Q310CR510	Q410CR510	10/pk
Hole Size: 5µm	Q225CR510	Q325CR510	Q425CR510	25/pk
Period: 15µm	Q250CR510	Q350CR510	Q450CR510	50/pk
	Q2100CR510	Q3100CR510	Q4100CR510	100/pk
Nickel	Q210NR510	Q310NR510	Q410NR510	10/pk
Hole Size: 5µm	Q225NR510	Q325NR510	Q425NR510	25/pk
Period: 15µm	Q250NR510	Q350NR510	Q450NR510	50/pk
	Q2100NR510	Q3100NR510	Q4100NR510	100/pk
Gold	Q210AR510	Q310AR510	Q410AR510	10/pk
Hole Size: 5µm	Q225AR510	Q325AR510	Q425AR510	25/pk
Period: 15µm	Q250AR510	Q350AR510	Q450AR510	50/pk
	Q2100AR510	Q3100AR510	Q4100AR510	100/pk

QUANTIFOIL® R 5/20 Hole size is 5µ. Space between holes is 20µ. Center to center is 25µ



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR-520	Q310CR-520	Q410CR-520	10/pk
Hole Size: 5µm	Q220CR-520	Q320CR-520	Q420CR-520	25/pk
Period: 25µm	Q225CR-520	Q325CR-520	Q425CR-520	50/pk
	Q250CR-520	Q350CR-520	Q450CR-520	100/pk
Nickel	Q210NR-520	Q310NR-520	Q410NR-520	10/pk
Hole Size: 5µm	Q220NR-520	Q320NR-520	Q420NR-520	25/pk
Period: 25µm	Q225NR-520	Q325NR-520	Q425NR-520	50/pk
	Q250NR-520	Q350NR-520	Q450NR-520	100/pk
Gold	Q210AR-520	Q310AR-520	Q410AR-520	10/pk
Hole Size: 5µm	Q220AR-520	Q320AR-520	Q420AR-520	25/pk
Period: 25µm	Q225AR-520	Q325AR-520	Q425AR-520	50/pk
	Q250AR-520	Q350AR-520	Q450AR-520	100/pk

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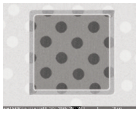
QUANTIFOIL® Holey Carbon Films (continued)

III QUANTIFOIL® with Circular Holes (continued)

QUANTIFOIL® R 6/6.5 Hole size is 6µ. Space between holes is 6.5µ. Center to center is 12.5µ



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR665	Q310CR665	Q410CR665	10/pk
Hole Size: 6µm	Q225CR665	Q325CR665	Q425CR665	25/pk
Period: 12.5µm	Q250CR665	Q350CR665	Q450CR665	50/pk
	Q2100CR665	Q3100CR665	Q4100CR665	100/pk
Nickel	Q210NR665	Q310NR665	Q410NR665	10/pk
Hole Size: 6µm	Q225NR665	Q325NR665	Q425NR665	25/pk
Period: 12.5µm	Q250NR665	Q350NR665	Q450NR665	50/pk
	Q2100NR665	Q3100NR665	Q4100NR665	100/pk
Gold	Q210AR665	Q310AR665	Q410AR665	10/pk
Hole Size: 6µm	Q225AR665	Q325AR665	Q425AR665	25/pk
Period: 12.5µm	Q250AR665	Q350AR665	Q450AR665	50/pk
	Q2100AR665	Q3100AR665	Q4100AR665	100/pk

QUANTIFOIL® R 10/10 Hole size is 10µ. Space between holes is 10µ. Center to center is 20µ

Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR1010	Q310CR1010	Q410CR1010	10/pk
Hole Size: 10µm	Q225CR1010	Q325CR1010	Q425CR1010	25/pk
Period: 20µm	Q250CR1010	Q350CR1010	Q450CR1010	50/pk
	Q2100CR1010	Q3100CR1010	Q4100CR1010	100/pk
Nickel	Q210NR1010	Q310NR1010	Q410NR1010	10/pk
Hole Size: 10µm	Q225NR1010	Q325NR1010	Q425NR1010	25/pk
Period: 20µm	Q250NR1010	Q350NR1010	Q450NR1010	50/pk
	Q2100NR1010	Q3100NR1010	Q4100NR1010	100/pk
Gold	Q210AR1010	Q310AR1010	Q410AR1010	10/pk
Hole Size: 10µm	Q225AR1010	Q325AR1010	Q425AR1010	25/pk
Period: 20µm	Q250AR1010	Q350AR1010	Q450AR1010	50/pk
	Q2100AR1010	Q3100AR1010	Q4100AR1010	100/pk

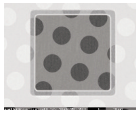
QUANTIFOIL® R 6/100 Hole size is 6µ. Space between holes is 100µ. Center to center is 106µ

Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR6100	Q310CR6100	Q410CR6100	10/pk
Hole Size: 6µm	Q225CR6100	Q325CR6100	Q425CR6100	25/pk
Period: 106µm	Q250CR6100	Q350CR6100	Q450CR6100	50/pk
	Q2100CR6100	Q3100CR6100	Q4100CR6100	100/pk
Nickel	Q210NR6100	Q310NR6100	Q410NR6100	10/pk
Hole Size: 6µm	Q225NR6100	Q325NR6100	Q425NR6100	25/pk
Period: 106µm	Q250NR6100	Q350NR6100	Q450NR6100	50/pk
	Q2100NR6100	Q3100NR6100	Q4100NR6100	100/pk
Gold	Q210AR6100	Q310AR6100	Q410AR6100	10/pk
Hole Size: 6µm	Q225AR6100	Q325AR6100	Q425AR6100	25/pk
Period: 106µm	Q250AR6100	Q350AR6100	Q450AR6100	50/pk
	Q2100AR6100	Q3100AR6100	Q4100AR6100	100/pk

QUANTIFOIL® R 10/20 Hole size is 10µ. Space between holes is 20µ. Center to center is 30µ

Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR1020	Q310CR1020	Q410CR1020	10/pk
Hole Size: 10µm	Q225CR1020	Q325CR1020	Q425CR1020	25/pk
Period: 30µm	Q250CR1020	Q350CR1020	Q450CR1020	50/pk
	Q2100CR1020	Q3100CR1020	Q4100CR1020	100/pk
Nickel	Q210NR1020	Q310NR1020	Q410NR1020	10/pk
Hole Size: 10µm	Q225NR1020	Q325NR1020	Q425NR1020	25/pk
Period: 30µm	Q250NR1020	Q350NR1020	Q450NR1020	50/pk
	Q2100NR1020	Q3100NR1020	Q4100NR1020	100/pk
Gold	Q210AR1020	Q310AR1020	Q410AR1020	10/pk
Hole Size: 10µm	Q225AR1020	Q325AR1020	Q425AR1020	25/pk
Period: 30µm	Q250AR1020	Q350AR1020	Q450AR1020	50/pk
	Q2100AR1020	Q3100AR1020	Q4100AR1020	100/pk

QUANTIFOIL® R 10/5
Hole size is 10µ. Space between holes is 5µ. Center to center is 15µ



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR105	Q310CR105	Q410CR105	10/pk
Hole Size: 10µm	Q225CR105	Q325CR105	Q425CR105	25/pk
Period: 15µm	Q250CR105	Q350CR105	Q450CR105	50/pk
	Q2100CR105	Q3100CR105	Q4100CR105	100/pk
Nickel	Q210NR105	Q310NR105	Q410NR105	10/pk
Hole Size: 10µm	Q225NR105	Q325NR105	Q425NR105	25/pk
Period: 15µm	Q250NR105	Q350NR105	Q450NR105	50/pk
	Q2100NR105	Q3100NR105	Q4100NR105	100/pk
Gold	Q210AR105	Q310AR105	Q410AR105	10/pk
Hole Size: 10µm	Q225AR105	Q325AR105	Q425AR105	25/pk
Period: 15µm	Q250AR105	Q350AR105	Q450AR105	50/pk
	Q2100AR105	Q3100AR105	Q4100AR105	100/pk

QUANTIFOIL® R 17/5 Hole size is 17.5µ. Space between holes is 5µ. Center to center is 22.5µ

Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CR175	Q310CR175	Q410CR175	10/pk
Hole Size: 17.5µm	Q225CR175	Q325CR175	Q425CR175	25/pk
Period: 22.5µm	Q250CR175	Q350CR175	Q450CR175	50/pk
	Q2100CR175	Q3100CR175	Q4100CR175	100/pk
Nickel	Q210NR175	Q310NR175	Q410NR175	10/pk
Hole Size: 17.5µm	Q225NR175	Q325NR175	Q425NR175	25/pk
Period: 22.5µm	Q250NR175	Q350NR175	Q450NR175	50/pk
	Q2100NR175	Q3100NR175	Q4100NR175	100/pk
Gold	Q210AR175	Q310AR175	Q410AR175	10/pk
Hole Size: 17.5µm	Q225AR175	Q325AR175	Q425AR175	25/pk
Period: 22.5µm	Q250AR175	Q350AR175	Q450AR175	50/pk
	Q2100AR175	Q3100AR175	Q4100AR175	100/pk

TEM SUPPORT FILMS

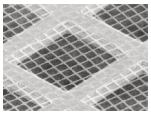
QUANTIFOIL® Holey Carbon Films (continued)

QUANTIFOIL® with Square Holes

QUANTIFOIL® with square holes and relatively narrow bars can be used in EM to support a thin carbon film, which by itself is too fragile to span a grid square. Alternatively, this holey film can directly support an object larger than the holes.

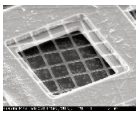
QUANTIFOIL® type	Hole size in µm	Spacing in µm	Period in µm
S 7/2	7	2.0	9
S 35/5	35	5	40
S 35/10	35	10	45

QUANTIFOIL® S 7/2 constitutes an optimum between a maximum of open area on the one hand, and mechanical stability on the other hand.



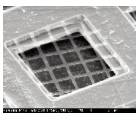
Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CS7	Q310CS7	Q410CS7	10/pk
Hole Size: 7x7µm	Q225-CS7	Q325CS7	Q425CS7	25/pk
Period: 9µm	Q250-CS7	Q350CS7	Q450CS7	50/pk
	Q2100CS7	Q3100CS7	Q4100CS7	100/pk
Nickel	Q210NS7	Q310NS7	Q410NS7	10/pk
Hole Size: 7x7µm	Q225-NS7	Q325NS7	Q425NS7	25/pk
Period: 9µm	Q250-NS7	Q350NS7	Q450NS7	50/pk
	Q2100NS7	Q3100NS7	Q4100NS7	100/pk
Gold	Q210AS7	Q310AS7	Q410AS7	10/pk
Hole Size: 7x7µm	Q225-AS7	Q325AS7	Q425AS7	25/pk
Period: 9µm	Q250-AS7	Q350AS7	Q450AS7	50/pk
	Q2100AS7	Q3100AS7	Q4100AS7	100/pk

QUANTIFOIL® S 35/5 Hole size is 35µ. Space between holes is 5µ. Center to center is 40µ.



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CS355	Q310CS355	Q410CS355	10/pk
Hole Size: 35x35µm	Q225CS355	Q325CS355	Q425CS355	25/pk
Period: 40µm	Q250CS355	Q350CS355	Q450CS355	50/pk
	Q2100CS355	Q3100CS355	Q4100CS355	100/pk
Nickel	Q210NS355	Q310NS355	Q410NS355	10/pk
Hole Size: 35x35µm	Q225NS355	Q325NS355	Q425NS355	25/pk
Period: 40µm	Q250NS355	Q350NS355	Q450NS355	50/pk
	Q2100NS355	Q3100NS355	Q4100NS355	100/pk
Gold	Q210AS355	Q310AS355	Q410AS355	10/pk
Hole Size: 35x35µm	Q225AS355	Q325AS355	Q425AS355	25/pk
Period: 40µm	Q250AS355	Q350AS355	Q450AS355	50/pk
	Q2100AS355	Q3100AS355	Q4100AS355	100/pk

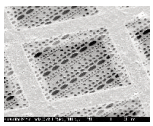
QUANTIFOIL® S 35/10 Hole size is 35µ. Space between holes is 10µ. Center to center is 45µ.



Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CS3510	Q310CS3510	Q410CS3510	10/pk
Hole Size: 35x35µm	Q225CS3510	Q325CS3510	Q425CS3510	25/pk
Period: 45µm	Q250CS3510	Q350CS3510	Q450CS3510	50/pk
	Q2100CS3510	Q3100CS3510	Q4100CS3510	100/pk
Nickel	Q210NS3510	Q310NS3510	Q410NS3510	10/pk
Hole Size: 35x35µm	Q225NS3510	Q325NS3510	Q425NS3510	25/pk
Period: 45µm	Q250NS3510	Q350NS3510	Q450NS3510	50/pk
	Q2100NS3510	Q3100NS3510	Q4100NS3510	100/pk
Gold	Q210AS3510	Q310AS3510	Q410AS3510	10/pk
Hole Size: 35x35µm	Q225AS3510	Q325AS3510	Q425AS3510	25/pk
Period: 45µm	Q250AS3510	Q350AS3510	Q450AS3510	50/pk
	Q2100AS3510	Q3100AS3510	Q4100AS3510	100/pk

QUANTIFOIL® with Different Hole Shapes

QUANTIFOIL® Multi A is a holey film, which consists of various pattern hole sizes, shapes and arrangements is repeated. In addition to round holes, the pattern includes ovalshaped ones, which appear round at high tilt angles (~70°). The diameters of the round holes are about 1, 1.4 and 2µ, and the bar widths range from 0.5 to 4µ. The oval holes in the foil have a dimension of 8 x 2µ and 4 x 1µ.

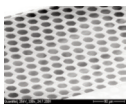


Grid Type	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
Copper	Q210CMA	Q310CMA	Q410CMA	10/pk
	Q225-CMA	Q325CMA	Q425CMA	25/pk
	Q250-CMA	Q350CMA	Q450CMA	50/pk
	Q2100CMA	Q3100CMA	Q4100CMA	100/pk
Nickel	Q210NMA	Q310NMA	Q410NMA	10/pk
	Q225-NMA	Q325NMA	Q425NMA	25/pk
	Q250-NMA	Q350NMA	Q450NMA	50/pk
	Q2100NMA	Q3100NMA	Q4100NMA	100/pk
Gold	Q210AMA	Q310AMA	Q410AMA	10/pk
	Q225AMA	Q325AMA	Q425AMA	25/pk
	Q250AMA	Q350AMA	Q450AMA	50/pk
	Q2100AMA0	Q3100AMA	Q4100AMA	100/pk

QUANTIFOIL® with Hexagonal Geometry

This type of **QUANTIFOIL®** is meant for slot grids. It was especially designed for supporting serial thin sections. It offers an optimum between mechanical stability on the one hand and background-free area on the other hand. The foil is thin enough to allow those parts of the sections that lie on the bars to be interpreted. In this way, the information in the sections can be interpreted to the maximum.

QUANTIFOIL® Hex 15 A foil with hole size of 26µm (diameter of inscribed circle) and a repeating distance of 41µm, the side length of the holes and the bar width are 15µm.



Grid Type	Hole Size	Description	Cat. #	Pack
Copper	26µm	0.5 x 2mm slot grids	Q225CR-HEX	50/pk
			Q250CR-HEX	100/pk
Nickel	26µm	0.5 x 2mm slot grids	Q225NR-HEX	50/pk
			Q250NR-HEX	100/pk
Gold	26µm	0.5 x 2mm slot grids	Q225AR-HEX	50/pk
			Q250AR-HEX	100/pk

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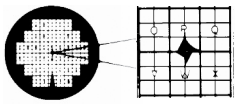
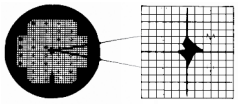
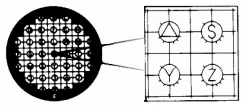
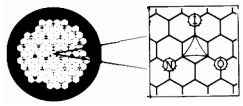
QUANTIFOIL® Holey Carbon Films (continued)

NEW...QUANTIFOIL® on London Finder Grids

Maxtaform grids with reference patterns are of the highest consistent quality, with a wide choice to choose from to suit all your particular needs.

All other geometries and thicknesses available upon request. NOW AVAILABLE WITH ULTRATHIN CONTINUOUS CARBON.

Grid Type	Hole Size	Period	London Finder H 2 Pitch 127µ, 200 mesh	London Finder H 7 Pitch 63µ, 400 mesh	London Finder H 15 Pitch 188µ, 135 mesh	London Finder H 6 Pitch 235µ, Honeycomb	Qty.
							
			Cat. # H 2	Cat. # H 7	Cat. # H 15	Cat. # H 6	
QUANTIFOIL® R 1.2/1.3							
Copper	~1.2µm	2.5µm	LFH2100CR1.3	LFH7100CR1.3	LFH15100CR1.3	LFH6100CR1.3	100/pk
Gold	~1.2µm	2.5µm	LFH2100AR1.3	LFH7100AR1.3	LFH15100AR1.3	LFH6100AR1.3	100/pk
QUANTIFOIL® R 1.2/1.3 with Ultrathin Carbon							
Copper	~1.2µm	2.5µm	LFH2100CR1.3-2nm	LFH7100CR1.3-2nm	LFH15100CR1.3-2nm	LFH6100CR1.3-2nm	100/pk
Gold	~1.2µm	2.5µm	LFH2100AR1.3-2nm	LFH7100AR1.3-2nm	LFH15100AR1.3-2nm	LFH6100AR1.3-2nm	100/pk
QUANTIFOIL® R 2/1							
Copper	1µm	3µm	LFH2100CR1	LFH7100CR1	LFH15100CR1	LFH6100CR1	100/pk
Gold	1µm	3µm	LFH2100AR1	LFH7100AR1	LFH15100AR1	LFH6100AR1	100/pk
QUANTIFOIL® R 2/1 with Ultrathin Carbon							
Copper	1µm	3µm	LFH2100CR1-2nm	LFH7100CR1-2nm	LFH15100CR1-2nm	LFH6100CR1-2nm	100/pk
Gold	1µm	3µm	LFH2100AR1-2nm	LFH7100AR1-2nm	LFH15100AR1-2nm	LFH6100AR1-2nm	100/pk
QUANTIFOIL® R 2/2							
Copper	2µm	4µm	LFH2100CR2	LFH7100CR2	LFH15100CR2	LFH6100CR2	100/pk
Gold	2µm	4µm	LFH2100AR2	LFH7100AR2	LFH15100AR2	LFH6100AR2	100/pk
QUANTIFOIL® R 2/2 with Ultrathin Carbon							
Copper	2µm	4µm	LFH2100CR2-2nm	LFH7100CR2-2nm	LFH15100CR2-2nm	LFH6100CR2-2nm	100/pk
Gold	2µm	4µm	LFH2100AR2-2nm	LFH7100AR2-2nm	LFH15100AR2-2nm	LFH6100AR2-2nm	100/pk
QUANTIFOIL® R 2/4							
Copper	2µm	6µm	LFH2100CR4	LFH7100CR4	LFH15100CR4	LFH6100CR4	100/pk
Gold	2µm	6µm	LFH2100AR4	LFH7100AR4	LFH15100AR4	LFH6100AR4	100/pk
QUANTIFOIL® R 2/4 with Ultrathin Carbon							
Copper	2µm	6µm	LFH2100CR4-2nm	LFH7100CR4-2nm	LFH15100CR4-2nm	LFH6100CR4-2nm	100/pk
Gold	2µm	6µm	LFH2100AR4-2nm	LFH7100AR4-2nm	LFH15100AR4-2nm	LFH6100AR4-2nm	100/pk
QUANTIFOIL® R 3.5/1							
Copper	3.5µm	4.5µm	LFH2100CR35	LFH7100CR35	LFH15100CR35	LFH6100CR35	100/pk
Gold	3.5µm	4.5µm	LFH2100AR35	LFH7100AR35	LFH15100AR35	LFH6100AR35	100/pk
QUANTIFOIL® R 3.5/1 with Ultrathin Carbon							
Copper	3.5µm	4.5µm	LFH2100CR35-2nm	LFH7100CR35-2nm	LFH15100CR35-2nm	LFH6100CR35-2nm	100/pk
Gold	3.5µm	4.5µm	LFH2100AR35-2nm	LFH7100AR35-2nm	LFH15100AR35-2nm	LFH6100AR35-2nm	100/pk

RELATED PRODUCTS...Sample Preparation, TEM Checker, Membrane Boxes, Gel Boxes

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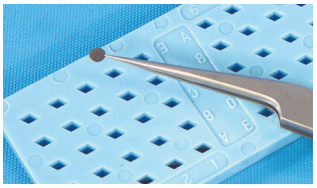
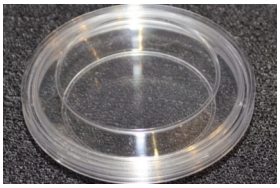
XTEM TEM Sample Preparation Kit

EMS offers this kit specifically for the preparation of cross-sectional TEM (XTEM) specimens.



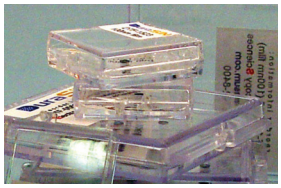
TEM Checker

Monitor the performance of your x-ray detectors. Contains (5) 3mm dia. manganese disks in a standard grid storage box.



Membrane Boxes

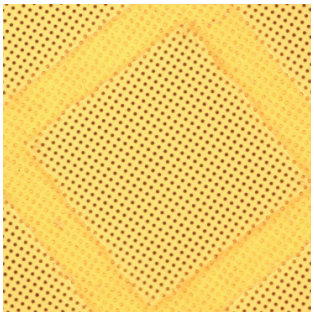
Unique membrane storage boxes for the transfer, storage and shipping of many delicate items. 5 different shapes and sizes.



Gel-Pak® Storage/ Carrier Boxes

Patented gel technology – the innovative solutions for storage and carrying delicate materials.

UltrAuFoil™ Holey Gold Films



These newly developed ultrastable gold supports for electron cryomicroscopy will reduce the movement of frozen specimens during imaging. This improves image contrast and quality, leading to better 3D reconstructions with less data.

During imaging at cryo-temperatures, traditional carbon supports move, particularly at the beginning of irradiation. This movement blurs images and makes it difficult to determine the structures of small and challenging molecules.

Using UltrAuFoils™, designed at MRC's Laboratory of Molecular Biology by Dr Christopher J. Russo and Dr Lori A. Passmore and produced by Quantifoil Micro Tools, specimen motion can be reduced significantly. (For details see: Ultrastable gold substrates for electron cryomicroscopy, Science, 2014, Vol. 346 no. 6215 pp. 1377-1380).

Characteristics of UltrAuFoil™

Thickness of Gold Foil	about 500 Å
Structure of Gold Foil	regular square array of micrometer-sized circular holes

Ordering Information

All other geometries and thicknesses available upon request

Grid Type	Hole Size	Period	Cat. # 200 Mesh	Cat. # 300 Mesh	Qty.
R 0.6/1					
Gold	0.6µm	1.6µm	—	**Q350AR1A**	50/pk
R 1.2/1.3					
Gold	1.2µm	2.5µm	—	**Q350AR13A**	50/pk
R 2/2					
Gold	2µm	4µm	**Q250AR2A**	—	50/pk

FREQUENTLY ASKED QUESTIONS ABOUT... UltrAuFoil™ Holey Gold Films

Why is the foil made of gold?
Because it is a highly conductive, nonoxidizing, radiation-hard material whose surface is chemically inert and biocompatible.

Why is the foil 500 Å thick?
400-500 Å is optimal because it minimizes motion as much as thicker layers but still gives thin ice films under typical blotting conditions. Below 400 Å, the performance of the gold support foils begins to degrade.

Why is the TEM grid made of gold?
Using the same metal eliminates differential thermal contraction during cooling of the sample and therefore prevents changes in the geometry and tension of the support foil.

How should I store the UltrAuFoils™ and within which time should I use them?
The UltrAuFoils™ like our other products should be stored in a grid storage box in a dark, cool and low-humidity environment. Generally there is no date of expiry, but we recommend to use them within two years.

Do I need to modify the UltrAuFoils™ before use?
No, they are ready for use when delivered. They can be made more hydrophilic using standard glow discharge and plasma systems or other gold surface treatments.

How do I set up the beam for data collection?
Currently, the recommended electron beam geometry is circularly symmetric beam, centered on the hole, which encompasses a small region of the support around each hole. The micrograph is taken in the center of the hole.

How do I focus using UltrAuFoils™?
Since there is no amorphous material in the gold support structure, Thon rings cannot be used to focus. As discussed in the publication, several other options are available, but the two simplest are:

1. *Turn on beam tilt wobble and minimize the image shift.*
2. *Look for the diffracted beams at the edge of a hole with the objective aperture removed. When the shift between the diffracted beams and the crystals of gold is minimized, the foil is in focus.*

How do I correct the astigmatism?
We recommend using a calibration specimen to correct the stigmation and beam tilt prior to collecting data on UlrAuFoils™.

Can I use automated data collection methods?
Yes, automated data collection has been successfully tested on UltrAuFoils™ using beam tilt to focus.

Are UltrAuFoils™ fragile?
No, they are similar or less fragile than traditional carbon foils. But if mishandled with tweezers or broken during freeze plunging, the stability of the support may be severely degraded. We recommend collecting data only from squares where the foil is uniform and intact.

Can I add a continuous film of amorphous carbon?
Yes. Standard float transfer methods work fine for transferring thin films of carbon onto UltrAuFoils™.

QUANTIFOIL® — Holey SiO_2 Films

The currently favored and already established material other than carbon is SiO_2.

Grid Type	Hole Size	Period	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
R 1/4						
Copper	1µm	5µm	**Q250CR-14S**	**Q350CR-14S**	**Q450CR-14S**	100/pk
Nickel	1µm	5µm	**Q250NR-14S**	**Q350NR-14S**	**Q450NR-14S**	100/pk
Gold	1µm	5µm	**Q250AR-14S**	**Q350AR-14S**	**Q450AR-14S**	100/pk
R 1.2/1.3						
Copper	1.2µm	2.5µm	**Q2100CR2.5S**	**Q3100CR2.5S**	**Q4100CR2.5S**	100/pk
Nickel	1.2µm	2.5µm	**Q2100NR2.5S**	**Q3100NR2.5S**	**Q4100NR2.5S**	100/pk
R 1.2/20						
Copper	1.2µm	21.2µm	**Q2100CR21.2S**	**Q3100CR21.2S**	**Q4100CR21.2S**	100/pk
Nickel	1.2µm	21.2µm	**Q2100NR21.2S**	**Q3100NR21.2S**	**Q4100NR21.2S**	100/pk

Grid Type	Hole Size	Period	Cat. # 200 Mesh	Cat. # 300 Mesh	Cat. # 400 Mesh	Qty.
R 2/2						
Copper	2µm	4µm	**Q2100CR-4S**	**Q3100CR-4S**	**Q4100CR-4S**	100/pk
Nickel	2µm	4µm	**Q2100NR-4S**	**Q3100NR-4S**	**Q4100NR-4S**	100/pk
Gold	2µm	4µm	**Q2100AR-4S**	**Q3100AR-4S**	**Q4100AR-4S**	100/pk
R 2/4						
Copper	2µm	6µm	**Q2100CR-4S**	**Q3100CR4S**	**Q4100CR4S**	100/pk
Nickel	2µm	6µm	**Q2100NR-4S**	**Q3100NR4S**	**Q4100NR4S**	100/pk
Gold	2µm	6µm	**Q2100AR-4S**	**Q3100AR4S**	**Q4100AR4S**	100/pk

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Graphene Support Films for TEM

EXCLUSIVE

OVERVIEW

Graphene is a single atomic layer of carbon atoms tightly packed in a two-dimensional honeycomb lattice. This novel material is atomically thin, chemically inert, consists of light atoms, and possesses a highly ordered structure. Graphene is electrically and thermally conductive, and is the strongest material ever measured. These remarkable properties make graphene the ideal support film for electron microscopy.

POTENTIAL APPLICATIONS:

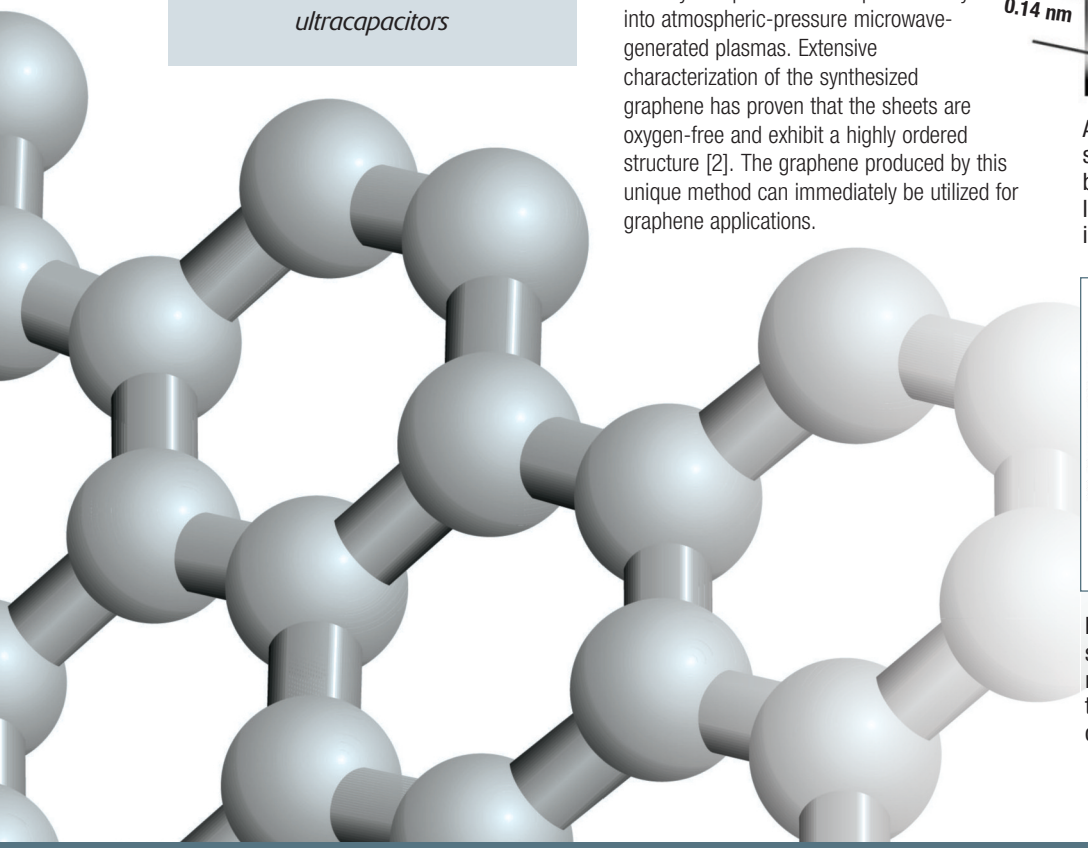
biodevices

single molecule gas detection

graphene nanoribbons
integrated circuits

transparent conducting electrodes

ultracapacitors

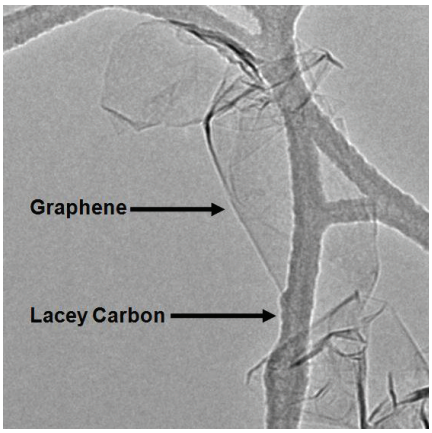


SYNTHESIS

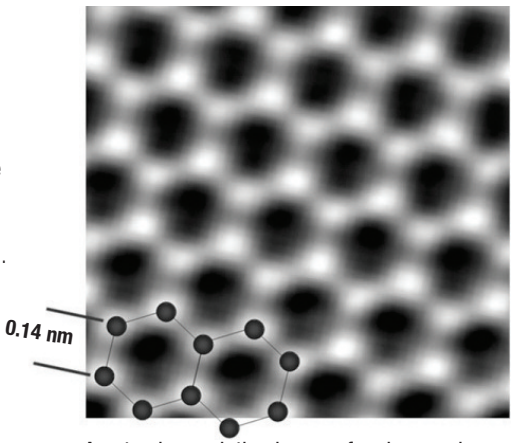
the substrate-free gas-phase method

Graphene is a single atomic layer of carbon atoms tightly packed in a two-dimensional honeycomb lattice. The novel material has generated great interest throughout the scientific and technological community because of its remarkable properties and numerous potential applications. However, obtaining pure and highly ordered graphene has been a challenge. Small quantities of ultrahigh-quality graphene have been isolated through an unwieldy and time-consuming process involving the mechanical exfoliation of highly oriented pyrolytic graphite. Alternative methods require substrates or graphite to create atomically-thin sheets, and these techniques involve multiple steps, expensive substrates, or non-ambient conditions. Furthermore, the sheets produced by these alternative methods exhibit defects, disorder, and oxygen functionalities that have a detrimental effect on the properties of graphene.

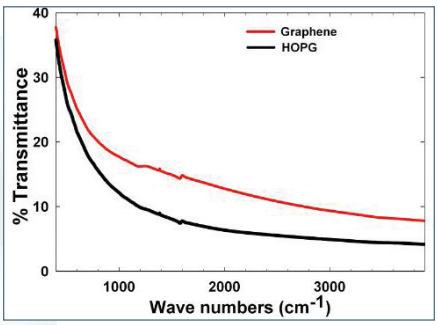
The substrate-free gas-phase method is the first and only process that can synthesize ultrahigh-quality graphene in a single step, without the use of substrates or graphite [1]. Graphene sheets are created through the delivery of liquid alcohol droplets directly into atmospheric-pressure microwave-generated plasmas. Extensive characterization of the synthesized graphene has proven that the sheets are oxygen-free and exhibit a highly ordered structure [2]. The graphene produced by this unique method can immediately be utilized for graphene applications.



A typical TEM image of graphene sheets freely suspended on a lacey carbon TEM grid.



An atomic-resolution image of a clean and structurally perfect graphene sheet synthesized by the substrate-free gas-phase method. Individual carbon atoms appear white in the image.



Elemental analysis by FT-IR reveals that the synthesized graphene sheets are free of detrimental oxygen functionalities. The FT-IR spectrum of synthesized graphene is similar to that of highly oriented pyrolytic graphite (HOPG).

Graphene Support Films for TEM (continued)

APPLICATION

Direct imaging of soft and hard nanomaterials

The interfaces between soft and hard nanomaterials have been the subject of extensive research.

Nanoparticles coated with molecular layers have been shown to self-assemble into novel structures that could potentially be used in electronics, sensors, and photonics. Self-assembly is influenced by the nature of molecular coatings and thus more detailed characterization of these soft materials is needed.

However, imaging surface molecules and their interfaces with nanoparticles at the atomic scale is a significant challenge. The transmission electron microscope (TEM) imaging of functionalized nanoparticles has been attempted.

However, it has not been possible to observe molecular surface layers and their interfaces with nanoparticles at the atomic level. Modern aberration-corrected TEMs can produce atomic-resolution images of soft and hard nanomaterials. However, conventional TEM support films (e.g. ultrathin amorphous carbon) limit the capabilities of these advanced microscopes because they contribute to overall electron scattering and diminish the contrast of low-atomic number specimens. The TEM imaging of the interfaces between soft and hard nanomaterials therefore requires better support films that have a lower dynamical interference with an imaging object [3].

Graphene is the ideal TEM support film. The material possesses a highly ordered structure and is atomically thin, chemically inert, structurally stable, and electrically and thermally conductive. The ultrahigh-quality graphene produced by the substrate-free gas-phase method [1, 2] has enabled the unsurpassed TEM imaging of organic molecules and the interfaces between soft and hard nanomaterials. The pure and highly-ordered sheets were used as a near-invisible support film to directly image the atoms in a gold nanoparticle and its surrounding citrate coating [3]. The results showed that the synthesized graphene can be used to directly observe nanoparticles functionalized with a diverse range of molecular coatings, such as proteins and DNA

We offer ultrahigh-quality graphene that is produced through the substrate-free gas-phase method[1]. The graphene created by this technique possesses a highly ordered structure that is composed of 99% carbon by mass (1% hydrogen)[2]. This graphene was used to directly image gold nanoparticles and their organic surface molecules in both conventional and atomic-resolution TEMs at a level that greatly surpasses any current TEM support film[3].

Our graphene provides an invisible, crystalline background that enables the unrivaled TEM characterization of organic and inorganic nanomaterials.

References:

[1] Dato et al., “Substrate-Free Gas-Phase Synthesis of Graphene Sheets”, Nano Letters 8, 2012–2016 (2008).

[2] Dato et al., “Clean and highly ordered graphene synthesized in the gas phase”, Chemical Communications, 6095–6097, (2009).

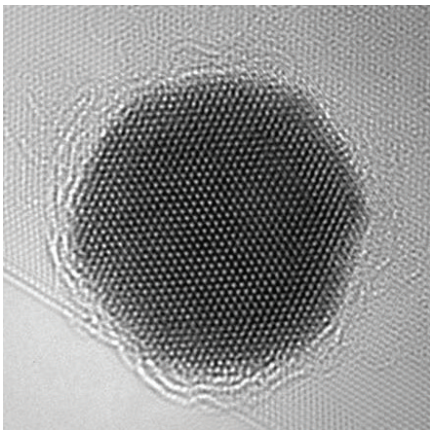
[3] Lee et al., “Direct Imaging of Soft-Hard Interfaces

Additional References:

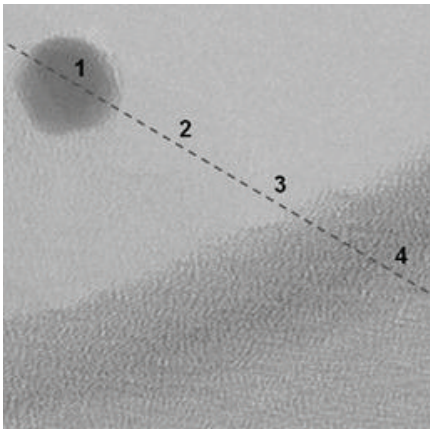
Galatzer-Levy, J. Graphene "sandwich" improves imaging of biomolecules. University of Illinois at Chicago News Center Web Site. February 4, 2014. Available at: http://news.uic.edu/graphene-sandwich-improves-imaging-of-biomolecules. Accessed February 12, 2014.

Wang, C., Qiao, Q., Shokuhfar, T. and Klie, R. F. (2014), High-Resolution Electron Microscopy and Spectroscopy of Ferritin in Biocompatible Graphene Liquid Cells and Graphene Sandwiches. Adv. Mater.. doi: 10.1002/adma.201306069

Dato, A. and Frenklach, M., "Substrate-free microwave synthesis of graphene: experimental conditions and hydrocarbon precursors", New Journal of Physics, 12, 1367-2630 (2010).



An atomic-resolution image of a 10 nm gold nanoparticle and its surrounding citrate capping agent on a synthesized graphene support film.



A low-magnification image of a (1) gold nanoparticle 10 nm in diameter on a (2) transparent synthesized graphene support film, (3) the vacuum, and (4) a lacey carbon support.

ORDERING INFORMATION

Graphene products come available in five different ways, allowing you to choose which is best for you

a) As a solution of 0.1 mg Graphene in 1 ml of Ethanol. A homogeneous solution will take less than 30 seconds to create by sonicating the Graphene-solvent mixture. One is able to coat their own grids using this solution.

b) As Graphene-enhanced lacey carbon TEM grids. 200 and 300 mesh. These grids are created by coating our existing lacey carbon grids with graphene. Through a unique drop method, solution is dispersed onto the Lacey Carbon Grid.

c) As dry, synthesized Graphene powder, 1 mg.

Cat. No.	Description	Qty.
GF1200	0.1 mg Graphene in 1 ml of Ethanol	each
GF1201	Graphene-Enhanced Lacey Carbon TEM Grid 200 # Cu	each
GF1202	Graphene-Enhanced Lacey Carbon TEM Grid 200 # Ni	each
GF1203	Graphene-Enhanced Lacey Carbon TEM Grid 300 # Cu	each
GF1204	Graphene-Enhanced Lacey Carbon TEM Grid 300 # Ni	each
GF1205	Synthesized Graphene Powder, 1 mg	each

Graphene Support Films for TEM (continued)

Graphene and Graphene Oxide Films

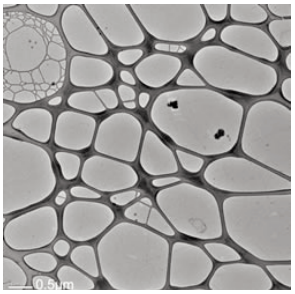
Graphene on Lacey Carbon 300 Mesh Copper TEM Grids

Graphene TEM support films are supported by a lacey carbon film on a 300 mesh copper TEM grid.

CAS No. 7782-42-5

Characteristics

1. Four thicknesses of CVD graphene
   Available in either 1, 2, 3-5 or 6-8 layers
2. TEM Substrate
   Lacey carbon support film on 300 mesh copper TEM grid
3. Graphene coverage of the TEM grid is better than 75%



Low magnification TEM image of single-layer graphene on lacey carbon film. Typical grain size is in the region of 2-3 µm

Appearance

The graphene film appears as a near-transparent to light-grey film on the surface of the Lacey Carbon mesh on a red-brown colored copper TEM grid.

SPECIFICATIONS

Type	Thickness of the Graphene	Transparency	TEM Grid/ AFM Substrate	Support Film
1 Layer	~0.35 nm	~96.4%	300 Mesh Copper Grid	N/A
2 Layers	~0.7 nm	~92.7%	300 Mesh Copper Grid	N/A
3-5 Layers	1.0-1.7 nm	~85.8-90.4%	300 Mesh Copper Grid	N/A
6-8 Layers	2.1-2.8 nm	~78.5-83.2%	300 Mesh Copper Grid	N/A

ORDERING INFORMATION

Cat. No.	Description	Qty.
1 Layer		
1GLC300Cu-5	Graphene on Lacey Carbon, 300 Cu	5/pk
1GLC300Cu-10	Graphene on Lacey Carbon, 300 Cu	10/pk
1GLC300Cu-25	Graphene on Lacey Carbon, 300 Cu	25/pk
2 Layers		
2GLC300Cu-5	Graphene on Lacey Carbon, 300 Cu	5/pk
2GLC300Cu-10	Graphene on Lacey Carbon, 300 Cu	10/pk
2GLC300Cu-25	Graphene on Lacey Carbon, 300 Cu	25/pk
3-5 Layers		
3GLC300Cu-5	Graphene on Lacey Carbon, 300 Cu	5/pk
3GLC300Cu-10	Graphene on Lacey Carbon, 300 Cu	10/pk
3GLC300Cu-25	Graphene on Lacey Carbon, 300 Cu	25/pk
6-8 Layers		
6GLC300Cu-5	Graphene on Lacey Carbon, 300 Cu	5/pk
6GLC300Cu-10	Graphene on Lacey Carbon, 300 Cu	10/pk
6GLC300Cu-25	Graphene on Lacey Carbon, 300 Cu	25/pk

Graphene on Ultra-Fine 2000 Mesh Copper TEM Grids

CAS No. 7782-42-5

Characteristics

1. Four thicknesses of CVD graphene
   Available in either 1, 2, 3-5 or 6-8 layers
2. TEM Substrate
   Microporous Copper TEM Grids with Beryllium-Copper Support Aperture
3. Graphene coverage of the TEM grid is better than 75%

Appearance

The graphene film appears as a near-transparent to light-grey film on the surface of the red-brown microporous copper TEM grid. For support, the TEM grid is attached using epoxy to a gold-colored beryllium-copper disk with a 2 x 1 mm aperture.

SPECIFICATIONS

Type	Thickness of the Graphene	Transparency	TEM Grid/ AFM Substrate	Support Film
1 Layer	~0.35 nm	~96.4%	2000 Mesh Copper Grid	N/A
2 Layers	~0.7 nm	~92.7%	2000 Mesh Copper Grid	N/A
3-5 Layers	1.0-1.7 nm	~85.8-90.4%	2000 Mesh Copper Grid	N/A
6-8 Layers	2.1-2.8 nm	~78.5-83.2%	2000 Mesh Copper Grid	N/A

ORDERING INFORMATION

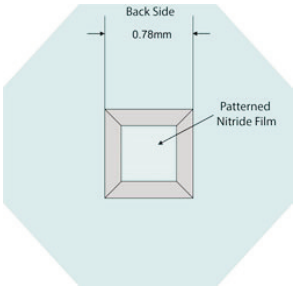
Cat. No.	Description	Qty.
1 Layer		
1GLC2000Cu-5	Graphene on Ultra-Fine, 2000 Cu	5/pk
1GLC2000Cu-10	Graphene on Ultra-Fine, 2000 Cu	10/pk
1GLC2000Cu-25	Graphene on Ultra-Fine, 2000 Cu	25/pk
2 Layers		
2GLC2000Cu-5	Graphene on Ultra-Fine, 2000 Cu	5/pk
2GLC2000Cu-10	Graphene on Ultra-Fine, 2000 Cu	10/pk
2GLC2000Cu-25	Graphene on Ultra-Fine, 2000 Cu	25/pk
3-5 Layers		
3GLC2000Cu-5	Graphene on Ultra-Fine, 2000 Cu	5/pk
3GLC2000Cu-10	Graphene on Ultra-Fine, 2000 Cu	10/pk
3GLC2000Cu-25	Graphene on Ultra-Fine, 2000 Cu	25/pk
6-8 Layers		
6GLC2000Cu-5	Graphene on Ultra-Fine, 2000 Cu	5/pk
6GLC2000Cu-10	Graphene on Ultra-Fine, 2000 Cu	10/pk
6GLC2000Cu-25	Graphene on Ultra-Fine, 2000 Cu	25/pk

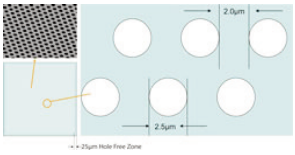
TEM SUPPORT FILMS

Graphene Support Films for TEM (continued)

Graphene and Graphene Oxide Films (continued)

Graphene on Silicon Nitride TEM Grids (2.5 µm holes)





Characteristics

1. Four thicknesses of CVD graphene
   Available in either 1, 2, 3-5 or 6-8 layers
2. TEM Substrate
   200 µm thick 3.0mm hexagonal silicon substrate with a 0.5 x 0.5 mm aperture and 200 nm thick silicon nitride membrane with approximately 6,400 2.5 µm holes
3. Graphene coverage of the TEM grid is better than 75%

Appearance

Solid hexagonal disk with a greenish hue. The graphene film appears as a near-transparent to light-grey film on the surface of the microporous Silicon Nitride membrane.

SPECIFICATIONS

Type	Thickness of the Graphene	Transparency	TEM Grid/ AFM Substrate	Support Film
1 Layer	~0.35 nm	~96.4%	2.5 µm Hole Silicon Nitride	Silicon Nitride
2 Layers	~0.7 nm	~92.7%	2.5 µm Hole Silicon Nitride	Silicon Nitride
3-5 Layers	1.0-1.7 nm	~85.8-90.4%	2.5 µm Hole Silicon Nitride	Silicon Nitride
6-8 Layers	2.1-2.8 nm	~78.5-83.2%	2.5 µm Hole Silicon Nitride	Silicon Nitride

ORDERING INFORMATION

Cat. No.	Description	Qty.
1 Layer		
1GSiN2.5um-5	Graphene on Silicon Nitride, 2.5 µm	5/pk
1GSiN2.5um-10	Graphene on Silicon Nitride, 2.5 µm	10/pk
1GSiN2.5um-25	Graphene on Silicon Nitride, 2.5 µm	25/pk
2 Layers		
2GSiN2.5um-5	Graphene on Silicon Nitride, 2.5 µm	5/pk
2GSiN2.5um-10	Graphene on Silicon Nitride, 2.5 µm	10/pk
2GSiN2.5um-25	Graphene on Silicon Nitride, 2.5 µm	25/pk
3-5 Layers		
3GSiN2.5um-5	Graphene on Silicon Nitride, 2.5 µm	5/pk
3GSiN2.5um-10	Graphene on Silicon Nitride, 2.5 µm	10/pk
3GSiN2.5um-25	Graphene on Silicon Nitride, 2.5 µm	25/pk
6-8 Layers		
6GSiN2.5um-5	Graphene on Silicon Nitride, 2.5 µm	5/pk
6GSiN2.5um-10	Graphene on Silicon Nitride, 2.5 µm	10/pk
6GSiN2.5um-25	Graphene on Silicon Nitride, 2.5 µm	25/pk

Graphene on Ultra-Flat Thermal SiO_2 Substrate

Characteristics

1. Four thicknesses of CVD graphene
   Available in either 1, 2, 3-5 or 6-8 layers
2. TEM Substrate
   The Ultra-flat Thermal SiO2 Substrate consists of a 200 nm thermally grown SiO2 film on an ultra-flat silicon wafer with a normal thickness of 675 µm. The size is 5 mm x 5 mm.
3. Graphene coverage of the TEM grid is better than 75%

Appearance

The graphene film appears as a near-transparent to light-grey film on the surface of the red-brown microporous copper TEM grid. For support, the TEM grid is attached using epoxy to a gold-colored beryllium-copper disk with a 2 x 1 mm aperture.

SPECIFICATIONS

Type	Thickness of the Graphene	Transparency	TEM Grid/ AFM Substrate	Support Film
1 Layer	~0.35 nm	~96.4%	N/A	Ultra-Flat Silicon
2 Layers	~0.7 nm	~92.7%	N/A	Ultra-Flat Silicon
3-5 Layers	1.0-1.7 nm	~85.8-90.4%	N/A	Ultra-Flat Silicon
6-8 Layers	2.1-2.8 nm	~78.5-83.2%	N/A	Ultra-Flat Silicon

ORDERING INFORMATION

Cat. No.	Description	Qty.
1 Layer		
1GUFSiO2-5	Graphene on Ultra-Flat Thermal SiO_2	5/pk
1GUFSiO2-10	Graphene on Ultra-Flat Thermal SiO_2	10/pk
1GUFSiO2-25	Graphene on Ultra-Flat Thermal SiO_2	25/pk
2 Layers		
2GUFSiO2-5	Graphene on Ultra-Flat Thermal SiO_2	5/pk
2GUFSiO2-10	Graphene on Ultra-Flat Thermal SiO_2	10/pk
2GUFSiO2-25	Graphene on Ultra-Flat Thermal SiO_2	25/pk
3-5 Layers		
3GUFSiO2-5	Graphene on Ultra-Flat Thermal SiO_2	5/pk
3GUFSiO2-10	Graphene on Ultra-Flat Thermal SiO_2	10/pk
3GUFSiO2-25	Graphene on Ultra-Flat Thermal SiO_2	25/pk
6-8 Layers		
6GUFSiO2-5	Graphene on Ultra-Flat Thermal SiO_2	5/pk
6GUFSiO2-10	Graphene on Ultra-Flat Thermal SiO_2	10/pk
6GUFSiO2-25	Graphene on Ultra-Flat Thermal SiO_2	25/pk

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Graphene Support Films for TEM (continued)

Graphene and Graphene Oxide Films (continued)

Graphene Oxide on Lacey Carbon 300 Mesh Copper TEM Grids

ORDERING INFORMATION

Cat. No.	Description	Qty.
1 Layer		
1GOLC300Cu-5	Graphene Oxide on Lacey Carbon, 300 Cu	5/pk
1GOLC300Cu-10	Graphene Oxide on Lacey Carbon, 300 Cu	10/pk
1GOLC300Cu-25	Graphene Oxide on Lacey Carbon, 300 Cu	25/pk
2 Layers		
2GOLC300Cu-5	Graphene Oxide on Lacey Carbon, 300 Cu	5/pk
2GOLC300Cu-10	Graphene Oxide on Lacey Carbon, 300 Cu	10/pk
2GOLC300Cu-25	Graphene Oxide on Lacey Carbon, 300 Cu	25/pk

Graphene Oxide on Silicon Nitride, 2.5 µm

ORDERING INFORMATION

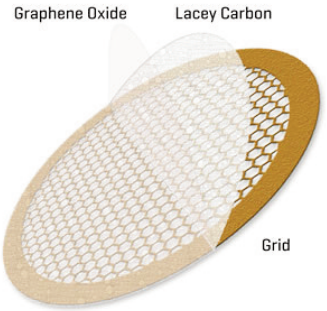
Cat. No.	Description	Qty.
1 Layer		
1GOSiN2.5um-5	Graphene Oxide on Silicon Nitride, 2.5 µm	5/pk
1GOSiN2.5um-10	Graphene Oxide on Silicon Nitride, 2.5 µm	10/pk
1GOSiN2.5um-25	Graphene Oxide on Silicon Nitride, 2.5 µm	25/pk
2 Layers		
2GOSiN2.5um-5	Graphene Oxide on Silicon Nitride, 2.5 µm	5/pk
2GOSiN2.5um-10	Graphene Oxide on Silicon Nitride, 2.5 µm	10/pk
2GOSiN2.5um-25	Graphene Oxide on Silicon Nitride, 2.5 µm	25/pk

Graphene Oxide on Ultra-Flat Thermal SiO_2

ORDERING INFORMATION

Cat. No.	Description	Qty.
1 Layer		
1GOUFSiO2-5	Graphene Oxide on Ultra-Flat Thermal SiO_2	5/pk
1GOUFSiO2-10	Graphene Oxide on Ultra-Flat Thermal SiO_2	10/pk
1GOUFSiO2-25	Graphene Oxide on Ultra-Flat Thermal SiO_2	25/pk
2 Layers		
2GOUFSiO2-5	Graphene Oxide on Ultra-Flat Thermal SiO_2	5/pk
2GOUFSiO2-10	Graphene Oxide on Ultra-Flat Thermal SiO_2	10/pk
2GOUFSiO2-25	Graphene Oxide on Ultra-Flat Thermal SiO_2	25/pk

Graphene Oxide TEM Support Films



Graphene Oxide (GO) support film is a super thin (<1nm), naturally hydrophilic layer placed over the Holey, Lacey or Quantifoil support film on copper or gold grids. Pre-treatment of GO Support Films is unnecessary - by default, the hydrophilic surface spreads particles evenly across the grid. A hydrophobic surface can be achieved by heating in the air. Note: plasma cleaning or glow discharge will damage the support film.

FEATURES

- **Works well with Holey Carbon, Lacey Carbon and Quantifoil grid types, effectively spanning the gaps**
- **Less expensive to produce due to complexity of graphene manufacturing**
- **Better background contrast than graphene, results in higher resolution**
- **Nearly transparent in electron beam**
- **Barely visible under optical microscopes**
- **Regular batch checking ensures correct coverage of monolayers**

ORDERING INFORMATION

Graphene Oxide on Holey Carbon Copper Mesh Grids

Cat. No.	Film	Grid	Mesh	Qty
GOHC300Cu10	GO on Holey Carbon	Cu	300	10/pk
GOHC300Cu25	GO on Holey Carbon	Cu	300	25/pk
GOHC300Cu50	GO on Holey Carbon	Cu	300	50/pk

Graphene Oxide on Lacey Carbon Copper Mesh Grids

Cat. No.	Film	Grid	Mesh	Qty
GOLC300Cu10	GO on Lacey Carbon	Cu	300	10/pk
GOLC300Cu25	GO on Lacey Carbon	Cu	300	25/pk
GOLC300Cu50	GO on Lacey Carbon	Cu	300	50/pk
GOLC300Cu100	GO on Lacey Carbon	Cu	300	100/pk

Graphene Oxide on Quantifoil Grids

Copper and Gold versions available

Cat. No.	Film	Grid	Mesh	Qty
GOQ200R24Cu10	GO on Quantifoils R2/4	Cu	200	10/pk
GOQ200R24Cu25	GO on Quantifoils R2/4	Cu	200	25/pk
GOQ200R24Cu50	GO on Quantifoils R2/4	Cu	200	50/pk
GOQ300R22Cu10	GO on Quantifoils R2/2	Cu	300	10/pk
GOQ300R22Cu25	GO on Quantifoils R2/2	Cu	300	25/pk
GOQ300R24Cu10	GO on Quantifoils R2/4	Cu	300	10/pk
GOQ300R24Cu25	GO on Quantifoils R2/4	Cu	300	25/pk
GOQ300R24Cu50	GO on Quantifoils R2/4	Cu	300	50/pk
GOQ400R1213Au10	GO on Quantifoils R1.2/1.3	Au	400	10/pk
GOQ400R1213Au25	GO on Quantifoils R1.2/1.3	Au	400	25/pk
GOQ400R1213Au50	GO on Quantifoils R1.2/1.3	Au	400	50/pk
GOQ400R1213Cu10	GO on Quantifoils R1.2/1.3	Cu	400	10/pk
GOQ400R1213Cu25	GO on Quantifoils R1.2/1.3	Cu	400	25/pk
GOQ400R1213Cu50	GO on Quantifoils R1.2/1.3	Cu	400	50/pk
GOQ400R1213Cu100	GO on Quantifoils R1.2/1.3	Cu	400	100/pk

TEM WINDOW GRIDS

Choosing a TEM Window Grid

	Amorphous Silicon	Porous Nanocrystalline Silicon	Silicon Dioxide	Silicon Nitride	Standard Carbon	Ultrathin Carbon
Actual Thickness (nm)	5, 9, 15	15	20 & 40	5, 10, 20, 50	20-50	~10
Image Quality	Excellent	Good	Ok	Good	Ok	Good
Plasma Cleanable	Yes	Yes	Yes	Yes	No	No
Elemental Analysis Background	Si Only	Si Only	Si, O	Si, N	C, H	C, H
Thermal Stability	~600C	>1000C	>1000C	>1000C	~400C	~400C
Chemical Stability	Avoid Strong Bases	Avoid Strong Bases	Good	Excellent	Good	Good
Tolerates High Beam Currents	Excellent	Excellent	Ok	Ok	Excellent	Excellent
Potential Contamination Source	None	None	None	None	Carbon	Carbon
Open Nanoscale Pores	No	Yes	No	No	No	No
Background	Featureless	Nanocrystalline	Featureless	Featureless	Featureless	Featureless

TEM Window Grid Membrane Strength

All our membrane types and membrane area configurations have been robustness tested by application of differential pressure. In these tests, the membrane was oriented such that differential pressure forced the membrane against the chip frame. In the opposite orientation where the membrane would be delaminated from the chip frame, the pressure tolerance would be several times lower.

All values below are the maximum tolerated differential pressure reported as mean +/- standard deviation (n = 3), in units of PSI.

Window Sizes:

9 Windows:
(8) 100x100, (1) 100x350 micron

9 Small Windows:
(8) 50x50, (1) 50x350 micron

2 Slots:
(2) 50x1500 micron

Single Windows:
(1) square window of x micron side-length

Membrane Window Strength - Differential Pressure Tolerance

Pure Silicon	Thickness 5 nm	9 nm	15 nm	30 nm	35 nm
9 Windows		3.90 ± 0.71	11.57 ± 0.26		
9 Small Windows	2.30 ± 0.29				
2 Slots	2.60 ± 0.99	2.53 ± 0.40	14.73 ± 2.61		
Single 25 Micron	35.33 ± 0.78				
Nanoporous - 9 Windows				16.47 ± 0.95	
Nanoporous - Single 500 Micron				3.33 ± 0.17	
Single Crystal - 9 Windows					34.03 ± 1.07

Silicon Nitride	Thickness 5 nm	10 nm	20 nm	50 nm
9 Windows		6.13 ± 2.00	40+	40+
9 Small Windows	37.30 ± 3.08			
9 Large Windows		11.57 ± 0.66		
2 Slots	6.53 ± 0.24			
Single 25 Micron	40+			
Single 100 Micron				25.13 ± 4.45
Single 500 Micron			9.90 ± 0.36	13.37± 1.25
Single 1000 Micron				7.80 ± 0.29
Microporous - Single 500 Micron			5.37 ± 0.37	10.13 ± 0.52
Nanoporous - Single 500 Micron			5.33 ± 1.39	

Silicon Dioxide	Thickness 20 nm	40 nm	75 nm
9 Windows	11.33 ± 0.37	12.73 ± 0.68	
G-Flat™ Single 1000 Micron			2.93 ± 0.17

X-Ray Windows	Thickness 50 nm	100 nm	200 nm	300 nm
Single 500 Micron	20.47 ± 0.33	24.40 ± 0.99		
Single 1000 Micron	9.67 ± 0.12	13.13 ± 0.09		
Single 1500 Micron			6.97 ± 0.25	
Single 2500 Micron			4.07 ± 0.09	
G-Flat™ Single 500 Micron		5.60 ± 0.29		11.53 ± 0.12
G-Flat™ Single 1000 Micron			2.63 ± 0.05	

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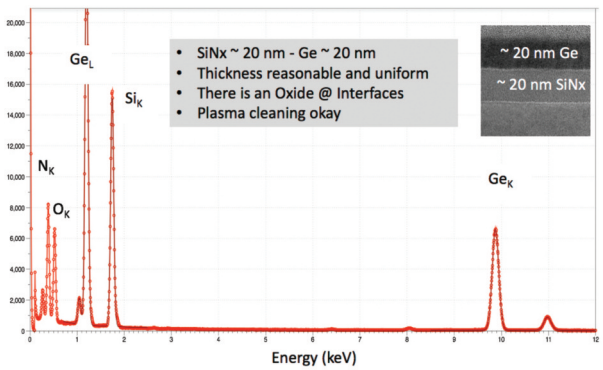
EDX/XEDS Calibration TEM Window Grid

Suspended germanium provides a unique calibration standard for x-ray energy dispersive spectroscopy



Since Ge is not typically found in TEM columns, the calibration samples provide a material that cannot be mistaken for instrument components and their signal peaks. The regime in which system peaks normally occur [2-9 keV and 11-20 keV] is devoid of peaks from the Ge.

The Ge is suspended across two micron pores that are patterned on a grid of 20 nm thick silicon nitride.

The single 500 x 500 micron window is compatible with high tilt angle tomography, since at 70 degrees of tilt, the thin and beveled 100 micron silicon frame allows you to use a ~50x50 micron region within the center of the window from any rotational orientation.

These EDX calibration standards were developed in partnership with Dr. Nestor J. Zaluzec from the Electron Microscopy Center and the Center for Nanoscale Materials at Argonne National Laboratory.

APPLICATIONS

- **Detector energy axis and energy resolution calibration**
- **Detector Window Transmission Evaluation**
- **Detector solid angle measurements**
- **Electron optical instrument system peak measurements**
- **Specimen holder penumbra measurements**

SPECIFICATIONS

20 nm thick germanium (Ge) coating on microporous 20 nm thick, low-stress silicon nitride (SiN)

Two micron pores on 1:1 pitch grid pattern

100 micron thick frame, fits 3 mm sample holders

(1) 500 x 500 micron window

CITATIONS

Zaluzec NJ, DesOrmeaux JP, and Roussie J. A Ge/SiNx Standard for Evaluating the Performance of X-ray Detectors in the SEM, S/TEM and AEM. Microscopy and Microanalysis, 22(S3): 322-323.

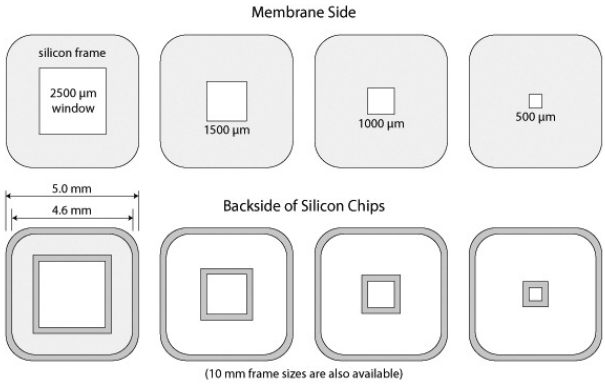
Zaluzec NJ, Wen J, Wang J, and Miller DJ. Quantitative Measurements of the Penumbra of XEDS Systems in an AEM. Microscopy and Microanalysis, 22(S3): 278-279.

ORDERING

Cat No.	Description	Qty.
76042-01	EDX-XEDS TEM Window Grid	5/pk

X-Ray Windows, Square Frame

X-Ray Windows - Ideal substrates for x-ray microscopy and x-ray spectroscopy techniques.



State-of-the-art manufacturing and expert engineering allow for competitive prices of these windows. Made in the USA, these X-Ray windows are entirely plasma cleanable to remove organic contamination.

Flat, uniformly deposited films provide consistent backgrounds with low field-to-field variability and high x-ray transmission.

Available in two membrane types:

Silicon Nitride: Low-stress LPCVD Silicon Nitride membranes are mechanically strong and well-suited for high temperature and differential pressure environments

G-FLAT™ Silicon Oxide: Proprietary wrinkle-free G-FLAT™ Silicon Oxide membranes are well-suited for correlative optical and x-ray microscopy and analyses requiring a nitrogen-free background

These membranes are ideally suited for biological imaging studies, with a glass-like hydrophilic surface.

ORDERING INFORMATION

G-FLAT™ Silicon Oxide X-Ray Windows

- **310 micron thick frame**
- **Unique G-Flat™ wrinkle-free Silicon Oxide film**
- **Compatible with ultra-high vacuum (UHV) applications (300nm Membrane)**
- **Non-Porous**

Cat. No.	Description	Window (Dim Sq.)	Membrane (Thickness)	Qty.
76042-10	G-FLAT™ SiO X-Ray Window	500µm	100nm	20/pk
76042-11	G-FLAT™ SiO X-Ray Window	500µm	300nm	20/pk

Silicon Nitride X-Ray Windows

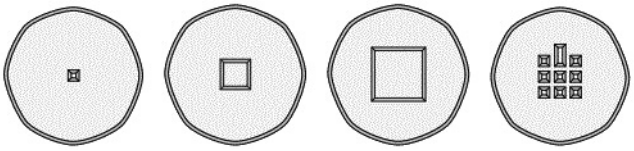
- **320 micron thick frame**
- **LPCVD silicon nitride film**
- **Low-Stress ~200 MPa**
- **Non-Porous**

Cat. No.	Description	Window (Dim Sq.)	Membrane (Thickness)	Qty.
76042-12	Silicon Nitride X-Ray Window	500µm	50nm	20/pk
76042-13	Silicon Nitride X-Ray Window	1000µm	50nm	20/pk
76042-14	Silicon Nitride X-Ray Window	500µm	100nm	20/pk
76042-15	Silicon Nitride X-Ray Window	1000µm	100nm	20/pk
76042-16	Silicon Nitride X-Ray Window	1500µm	200nm	20/pk
76042-17	Silicon Nitride X-Ray Window	2500µm	200nm	20/pk

TEM WINDOW GRIDS

Silicon Nitride TEM Window Grids

Silicon Nitride TEM Window Grids perform well under harsh lab conditions.



Silicon frames are 100µm thick. Grids fit standard 3mm holders and most double tilt holders. They come in clear gel-boxes for simpler sample preparation.

FEATURES

- **Plasma Cleanable —** can be vigorously plasma cleaned to remove organic contamination
- **Field to Field Uniformity —** Less than 0.5 nm variation in film thickness across an entire production log, not just a single window grid
- **Tolerates temperatures above 1000°C —** Supports use in environmental TEMs where dynamic processes are observed at high temperatures
- **Withstands Harsh Conditions —** Provides an ideal balance of imaging resolution, chemical stability and mechanical strength
- **Incorporates LPCVD, low-stress (~250MPa), non-stoichiometric silicon nitride —** Provides flat, insulating and hydrophobic surfaces

RECOMMENDED USE

High Resolution Imaging:	5nm	**76042-43**, 1 square (25x25µm) **76042-44**, 9 squares (50x50µm) **76042-45**, 2 slots (50x1500µm)*
Robust, Increased High Resolution:	10nm	**76042-46**, 9 squares (100x100µm)
Everyday Imaging:	20nm	**76042-49**, 1 square (500x500µm) **76042-50**, 9 squares (100x100µm)
Demanding Conditions:	50nm	**76042-53**, 1 square (100x100µm) **76042-52**, 1 square (500x500µm) **76042-51**, 1 square (1000x1000µm) **76042-50**, 9 squares (100x100µm)
Materials & Cryo-EM Suspension:	Microporous	**76042-41**, 1 square (500x500µm) **76042-40**, 1 square (500x500µm)

*Coated with 1 nm of ultrahigh purity carbon to minimize charging

ORDERING INFORMATION

Cat. No	Window(s) (Dim.)	SiN (Th)	Qty
Silicon Nitride Microporous TEM Window Grids (2.0 µm pores with labeled grid)			
76042-40	500µm sq.	20nm	10/pk
76042-41	500µm sq.	50nm	10/pk
Silicon Nitride Nanoporous TEM Window Grid			
76042-42	500µm sq.	20nm	10/pk
Silicon Nitride TEM Window Grids			
76042-43	25µm sq.	5nm	10/pk
76042-44	(8) 50µm sq., (1) 50x100µm	5nm	10/pk
76042-45	(2) 50x1500µm	5nm	10/pk
76042-46	(8) 100 sq., (1) 100x350µm	10nm	10/pk
76042-47	(8) 250 sq., (1) 250x500µm	10nm	10/pk
76042-48	(8) 100 sq., (1) 100x350µm	20nm	10/pk
76042-49	500µm sq.	20nm	10/pk
76042-50	(9) 100µm sq.	50nm	10/pk
76042-51	1000µm sq.	50nm	10/pk
76042-52	500µm sq.	50nm	10/pk
76042-53	100µm sq.	50nm	10/pk

Silicon Dioxide TEM Window Grids

Engineered to be easier to handle.

By making the grids slightly narrower users now have easy access to grids in TEM holders. No more fumbling with tweezers while trying to pick up or put down grids. The new TEM Window grid shape is still compatible with all standard holders. TEM Window dimensions are 2.9mm in diameter and 100µm thick.

FEATURES

- **Plasma Cleanable —** Can be vigorously plasma cleaned to remove organic contamination
- **Field to Field Uniformity —** Reduced variability
- **Tolerates temperatures above 1000°C —** Supports use in environmental TEMs where dynamic processes are observed at high temperatures
- **Withstands Harsh Conditions —** Provides an ideal balance of imaging resolution, chemical stability and mechanical strength
- **Incorporates stoichiometric silicon dioxide —** Offers the ability to analyze for nitrogen by EDX techniques

SPECIFICATIONS

100 micron thick frame, fits 3 mm sample holders

Non-Porous films are lightly wrinkled with approximately 5 microns or less deflection across 100 microns of travel. This is typically not problematic for high-resolution imaging.

GFLAT silicon oxide films are created by a proprietary process that uniquely results in flat, suspended silicon oxide membranes. These membranes are ideally suited for biological imaging studies, with a glass-like hydrophilic surface. These TEM Windows are essentially micro-scale glass cover slips.

ORDERING INFORMATION

Cat. No	Window(s)(Dim.)	SiO_2 (Th)	Qty
Non-Porous Silicon Dioxide TEM Windows			
76042-90	(8) 100µm, (1) 100x350µm	40nm	10/pk
76042-91	(8) 50µm, (1) 50x100µm	20nm	10/pk
Non-Porous Silicon Dioxide G-FLAT Window			
76042-92	1000µm sq.		

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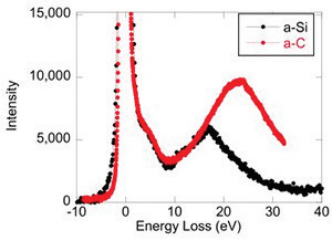
Pure Silicon TEM Windows

Pure Silicon sets these TEM windows apart from the rest

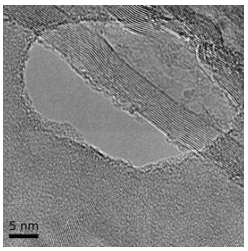
5nm, 9nm, 15nm, 35nm

FEATURES

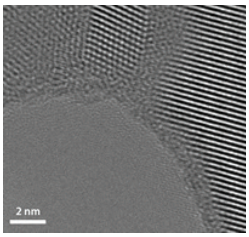
- **Nanometer Thinness —** Pure Silicon TEM Windows feature imaging windows with 5 to 35nm thickness, reducing background contribution and interference for higher contrast imaging. Most impressively, 5nm thick Non-Porous Pure Silicon TEM Windows are thinner than the thinnest commercially available amorphous carbon membranes.
- **Plasma Cleanable —** can be vigorously plasma cleaned to remove organic contamination, unlike traditional carbon grids
- **Field to Field Uniformity —** Non-Porous Pure Silicon TEM Windows are more consistently thin than carbon grids, reducing field-to-field variability. (Note: Porous windows do have inherent crystalline features, but feature background-free nanometer-scale pores).
- **Reduced Chromatic Blur—** In comparison to the thinnest commercially available amorphous carbon membranes, 5 nm Non-Porous Pure Silicon TEM Windows yield half the chromatic blur. This dramatic difference results from a two-fold reduction in inelastic scattering of electrons passing through the thinner membranes of Silicon TEM Windows. In turn, the reduced chromatic blur offers a potential two-fold improvement in imaging resolution.



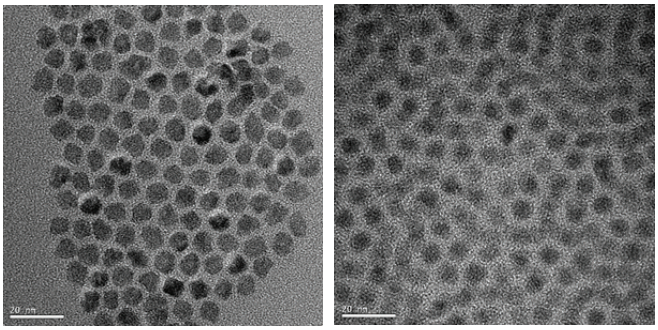
- **Nanometer-Scale Pores —** Pure Silicon TEM Windows are available as porous films with pores ranging from 5 to 50 nm in diameter. The pores allow simple and stable suspension of nanoscale materials for imaging without intervening background.



- **Silicon Composition —** The elemental silicon composition of TEM Windows remarkably increases stability at high beam currents and at high annealing temperatures. The Pure Silicon composition also introduces a minimal background signal, making elemental analyses of sample containing nitrogen and/or carbon possible by EDX and EELS.
- **Isolated Poly-Crystallinity —** The polycrystalline nature of porous Pure Silicon TEM Windows offers an internal calibration standard for x-ray diffraction studies. The isolated crystalline features also provides a convenient and reliable scale for high-resolution size measurements, well-characterized crystal lattice of silicon.



- **Hydrophilicity —** The hydrophilicity of both non-porous and porous Pure Silicon TEM Windows is tunable by plasma and/or ozone treatment making sample preparation easier, particularly for samples in aqueous solutions.
- **Increased Stability —** At high beam currents and high annealing temperatures (600°C for non-porous, >1000°C for nanoporous)
- **Silicon Composition —** Sputter-deposited, pure, intrinsic silicon
- **Minimal Background Signal —** Enables elemental analyses of samples containing nitrogen and/or carbon

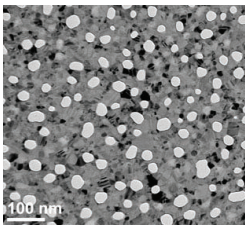


Lead Selenide nanoparticles on 5 nm non-porous Pure Silicon TEM Window (left) and conventional carbon film (right). Particles provided by Chris Evans, University of Rochester and imaged by Brian McIntyre, University of Rochester.

OPTIONS

Nanoporous — Using P30 membranes has made the Nanoporous TEM windows significantly more porous. Pore sizes have increased to include a range of pores from 10-60 nanometers in diameter.

Single Crystal — with <1-0-0> orientation, offers a very thin 35nm membranes for diffraction studies and other applications requiring uniform background from a single crystal film.



Nanoporous Low-resolution TEM image of a new P30 Nanoporous TEM Window

Non-porous — Non-Porous films are lightly wrinkled with approximately 5 microns or less deflection across 100 microns of travel. This is typically not problematic for high-resolution imaging.

ORDERING INFORMATION

Cat. No	Window(s) (Dim.)	Si (Th)	Qty
Single Crystal Pure Si TEM Windows			
76042-70	(8) 100µm, (1) 100x350µm	35nm	10/pk
Non-Porous Pure Si TEM Windows			
76042-71	25µm sq.	5nm	10/pk
76042-72	(8) 50µm sq., (1) 50x100µm	5nm	10/pk
76042-73	(2) 50x1500µm	5nm	10/pk
76042-74	(8) 100 sq.,(1) 100x350µm	9nm	10/pk
76042-75	(2) 100x1500µm	9nm	10/pk
76042-76	(8) 100 sq., (1) 100x350µm	15nm	10/pk
76042-77	(2) 100x1500µm	15nm	10/pk
Nanoporous Pure Si TEM Windows			
76042-78	500µm sq.	-	10/pk
76042-79	(8) 100 sq., (1) 100x350µm	-	10/pk

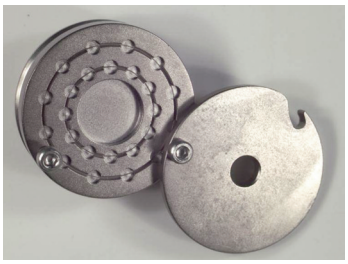
TEM GRID HOLDERS

TEM Grid Holder on a Pin

This EMS new release allows for the holding of up to 4 grids. Made from Aluminum with a brass Screw this holder allows you to image and analyze specimens on TEM Grids in the SEM. The Overall diameter of the holder is 1" (25mm) with a 1/8" Pin (3.2mm) and a longer pin 0.6" (15mm). The Grid locations are all numbered

75949-03	TEM Grid Holder on Pin	each

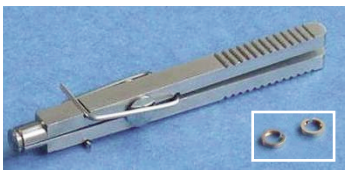
TEM Grid Freeze Drying Holder



Freeze drying holder to hold 24 standard TEM grids.

EMS063	TEM Grid Freeze Drying Holder	each

3 mm Circlips and Insertion Tool



Circlips are for all EMS TEM sample holders and specimen rods. They are made from heat treated Beryllium copper.

The Circlip extraction tool is for removing our Circlips from all TEM sample holders.

EMS015	3 mm Circlips	each
EMS016	Circlips Insertion Tool	each

JEOL 2-Position Single Tilt Holder

A single tilt two-grid sample holder. Grids are held in place by easy to remove circlips.

Comes complete with loading stand, circlip extraction tool, and is supplied in its own mahogany box.

EMS017	JEOL 2-Position Single Tilt Holder	each

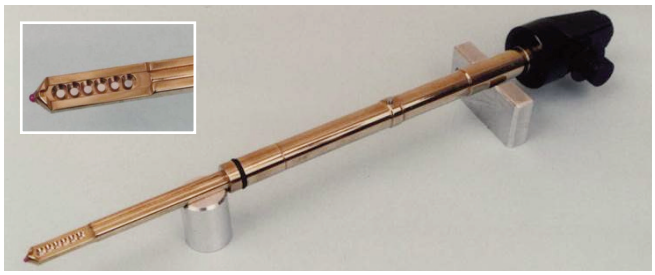
JEOL 3-Position Grid Insert

A three position insert which will fit standard JEOL 2 position holders as a direct replacement.

Specimens are held in place with our push fit, easy to use circlips. The circlip extraction tool, Cat. #EMS016 is needed to install and remove circlips.

EMS056	JEOL 3-Position Grid Insert	each

JEOL 2-Position Single Tilt Holder

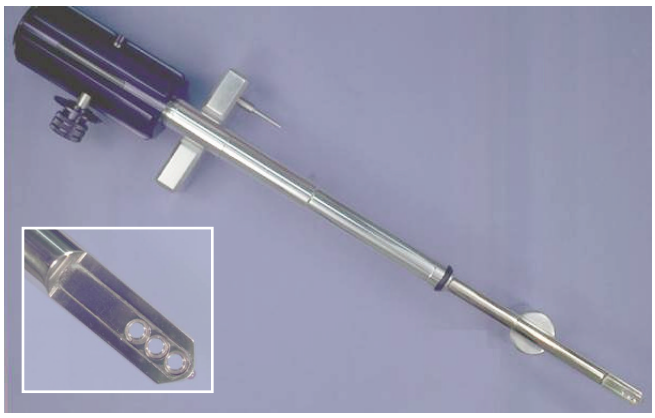


A single tilt multi-grid holder. Will accommodate 6 grids with an easy click stop reproducible movement between each specimen. It is ideal for scanning through serial sections or for comparing against a standard.

Grids are held in place by easy to remove circlips. Comes complete with loading stand, circlip extraction tool, and is supplied in its own mahogany box.

EMS027	JEOL 2-Position Single Tilt Holder	each

Hitachi 3-Position Multi-Sample Holder



A single tilt multi-grid holder. Will accommodate 3 grids with easy reproducible movement between each specimen. It is ideal for scanning through serial samples or for comparing against standards.

Grids are held in place by easy to remove circlips.

Comes complete with loading stand, circlip extraction tool, and is supplied in a mahogany box.

EMS022	Hitachi 3-Position Multi-Sample Holder	each

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Philips Bulk Sample Holder for Compustage

A single-tilt multi-functional sample holder for use in either SEM or TEM modes.

Includes slit serial section tip, 10 bulk, and a TEM 3.05 mm grid holder for use with TEM or STEM. Comes supplied in its own mahogany box, with a loading stand, and a circlip extraction tool.

EMS054 Philips Bulk Sample Holder for Compustage each

Philips Single Tilt Single-Sample Holder

A single tilt single sample holder. Will accommodate 3 mm grids. Grids are held in place by easy to remove circlips. Comes complete with loading stand, circlip extraction tool, and is supplied in its own box. Suitable for 400 and non-compustage microscopes.

EMS021 4-Position Multi-Sample Holder each

Philips 4-Position Multi-Sample Holder

A single tilt multi-grid holder. Will accommodate 4 grids with easy reproducible movement between each specimen. It is ideal for scanning through serial samples or for comparing against standards.

Grids are held in place by easy to remove circlips. Comes complete with loading stand, circlip extraction tool, and is supplied in a mahogany box. Suitable for 400 and non-compustage microscopes.

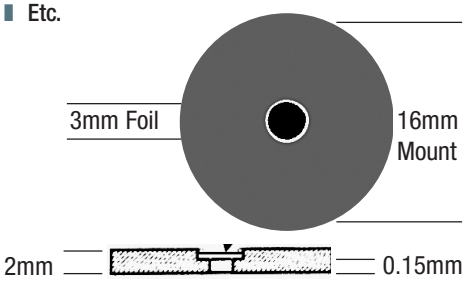
EMS020 Philips 4-Position Multi-Sample Holder each

Pinholes

These pinholes are prepared from pure copper foil, 3mm in diameter, 25 microns thick. They possess very high roundness and edge retention. Blackened on one surface. Mounted in black anodized aluminum discs. Mounted in a recessed hole in an anodized holder, 16 mm in diameter.

Applications

- Spatial filtering
- Controlling the diameter of light beams
- Creating point light sources
- Image analysis
- Etc.



Hole Range	Tolerance
101-500µm	+/- 2µm
25-100µm	+/- 1µm
1-25µm	+/- 0.5µm

Cat. No.	Description	Qty.
PH-C1	Pin Hole 0.001mm (1µm) diameter	each
PH-C2	Pin Hole 0.002mm (2µm) diameter	each
PH-C5	Pin Hole 0.005mm (5µm) diameter	each
PH-10	Pin Hole 0.01mm (10µm) diameter	each
PH-C25	Pin Hole 0.025mm (25µm) diameter	each
PH-C50	Pin Hole 0.05mm (50µm) diameter	each
PH-100	Pin Hole 0.1mm (100µm) diameter	each
PH-C250	Pin Hole 0.25mm (250µm) diameter	each
PH-C1000	Pin Hole 1.0mm (1000µm) diameter	each

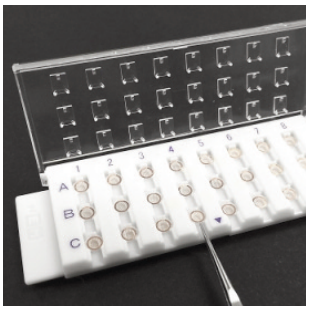
GRID PREPARATION SUPPLIES AND ACCESSORIES

Grid Storage & Transport

Horizontal Grid Box

Slide-in type

These grid boxes offer easy handling of the grids without damaging the support film.



Cat. No.	Description	Qty.
71161-01	Horizontal Grid Box	each
71161-02	Horizontal Grid Boxes	3/pk
71161-03	Horizontal Grid Boxes in Case	8/pk

EMS25 TEM Grid Storage Box

The EMS25 is a small capacity grid storage box, designed as a low alternative to larger grid boxes where extra storage capacity is not required.

The box has a sliding cover, allowing access to 5 slots at a time.

Each diamond shaped hole is capable of storing a 3.05 mm or 2.3 mm diameter grid. Storage referencing is managed via recessed alpha numeric indexing on the sides of the box.

The box contains two side features, allowing for easier handling during specimen removal, as well as a matte strip for extra notation.

The EMS25 is also available with a unique number printed in blue on the face, code EMS25BN; batches with sequential numbers are available. Both boxes come with a durable 25 column card for record keeping.

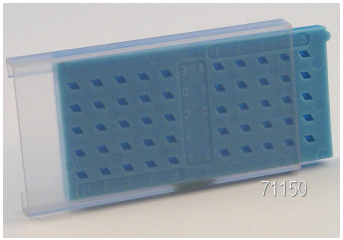
Our grid boxes are intended for use in both routine grid handling and for long term grid storage. Their compact flat shape and low cost make them well suited for the transportation of coated grid products and for the long term storage of catalogued specimens.

SPECIFICATIONS

Size	56 mm (L) x 36 mm (W) x 6 mm (D)
Weight	9 grams
Materials	Base: ABS-PHAT (Acrylonitrile Butadiene Styrene + Anti-Static Additive) Cover: Clear Polycarbonate

Cat. No.	Description	Qty.
71159	EMS25 TEM Grid Storage Box, 25 Capacity	each
71159-10	EMS25 TEM Grid Storage Box, 25 Capacity	1 dozen
71159-20	EMS25 TEM Grid Storage Box, 25 Capacity, w/number	each
71159-30	EMS25 TEM Grid Storage Box, 25 Capacity, w/number	1 dozen

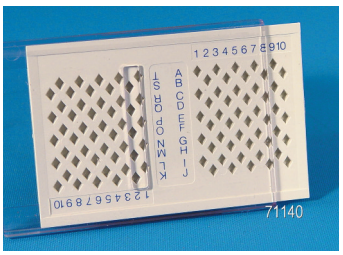
Grid Storage Box, 50 Capacity



Storage for 50 grids in deep diamond-shaped wells. All wells are identified. The base is resistant to organics and reactions can be carried out on grid-mounted samples in the wells. Complete with grid recording card. Measures: 3"(L) x 1 3/16"(W) x 5/16"(H) (77x40x8mm)

Cat. No.	Description	Qty.
71150	Grid Storage Box, 50 Capacity	each
71152	Grid Storage Box, 50 Capacity	1 dozen

Grid Storage Box, 100 Capacity



100 grids can be stored in identified diamond-shaped wells for daily handling or long-term storage. Complete with grid recording card. Measures: 3 5/16"(L) x 2 5/16 (W) x 9/32"(H) (85x58x7mm)

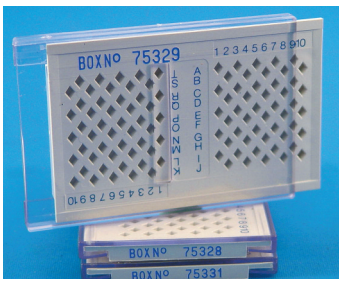
Cat. No.	Description	Qty.
71140	Grid Storage Box, 100 Capacity	each
71142	Grid Storage Box, 100 Capacity	1 dozen

Grid Storage Box, 100 Capacity

A newly designed grid storage box similiar to the original LKB box. Made from a special plastic that minimizes static. Complete with grid recording card. Measures: 8cm(L) x 5cm(W) x7mm(T)

Cat. No.	Description	Qty.
71155	Grid Storage Box, 100 Capacity	each
71156	Grid Storage Box, 100 Capacity	1 dozen

Numbered Grid Storage Box, 100 Capacity



The standard 100 capacity grid storage box with a unique number printed on the face and on one end.

- **Eliminates the placement of the specimen grid in the wrong box.**
- **Easy retrieval of grid box from storage.**
- **Complete with grid recording card.**

Cat. No.	Description	Qty.
71137	Numbered Grid Storage Box, 100 Capacity	each
71138	Numbered Grid Storage Box, 100 Capacity	10/lot
71139	Numbered Grid Storage Box, 100 Capacity	100/lot

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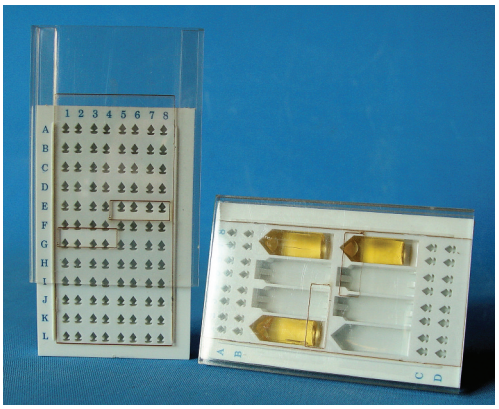
Multipurpose Electron Microscope Specimen Box – MEM Grid Box

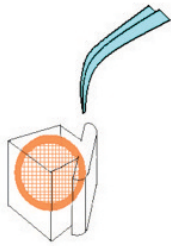
A newly designed Grid Box with safety, ease and convenience in mind – this multipurpose electron microscope specimen grid box is one of the most desirable boxes on the market.



- **Eliminates the chances of tweezers insertion damaging the grids – The 'tweezers slot' and 'grid slot' are in a separate location. The tweezers are only able to grip the edge of the grid enabling it to be picked up**
- **Grids stored no longer jump out of the box while you remove the cover – Between the body of the box and the sliding lid, there is a separate plastic cover, which allows for only four slots being exposed at a time**
- **The Grid Record Card is stored safely by insertion along the reverse side of the box**
- **MEM-96 – will able to store up to 96 grids**
- **MEM-32 – will able to store up to 32 grids with 8 Blocks**
- **Measures: 81mm L x 54mm W x 6mm thick**

1. Pick up a grid

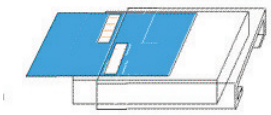
Removes the problem of inserting the tweezers too deep or damaging the tissues. The tweezers slot and grid hole connect. The tweezers insertion slot grips the edge of the grid, so does not damage the tissues and membrane.



2. Move Plastic sheet

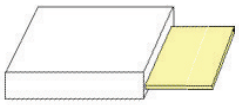
Prevents grids from jumping out of the grid hole and mixing together. Between the body of the box and lid, there is a plastic cover piece so that when you pick up the grid, only four grid holes are exposed at once; the others remain covered by the plastic cover piece and lid.

Safeguards against loss of samples, or information of stored samples becoming separated.

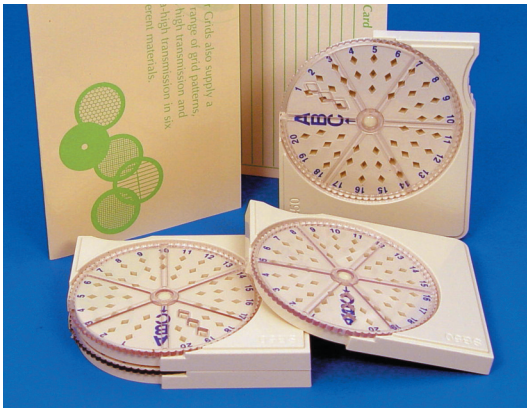


3. Record Card

Three different components (semi-thin section, thin section, block) and record card are all stored in one box (MEM-32 grid-8 block). You can find everything and store all of your samples in one box.



Cat. No.	Description	Qty.
71164-01	MEM-96 Grid Storage Box	each
71164-10	MEM-96 Grid Storage Box	10/pk.
71165-01	MEM-32 Grid Storage Box	each
71165-10	MEM-32 Grid Storage Box	10/pk.



TEM-Specimen Grid Box – SB50

This newly designed TEM grid storage box, for routine handling and long term storage of 50 standard size TEM grids. This new ergonomic design incorporates several features that overcome the disadvantages associated with storage boxes of the more conventional 'sliding cover' design. This new box has a unique number on the face and on one end.

FEATURES

- **The blue arrow at the 12:00 o'clock position indicates the park position for the cover when not it is not in use. This is a firm grip 'click' position and it cannot be moved accidentally thus preventing spillage.**
- **The clear cover can be rotated smoothly through 360 degrees once the slight initial resistance of the park position has been overcome exposing a maximum of 2 or 3 diamond shaped slots at any one time.**
- **The 50 diamond shaped slots have an alphanumeric referencing system. Each box is supplied with an index record card for additional information.**
- **The material the bases are made from have been chosen due to their anti-static properties. The clear cover has self-lubricating properties, which reduces friction, enabling the cover to move freely while remaining in close contact with the face of the base.**
- **The storage boxes are designed to be stacked, the base locating precisely over the face of another box.**

SPECIFICATIONS:

Size	75mm (L) x 65mm(W) x 6.5mm(D)
Weight	22 grams
Materials:	Base: ABS-PHAT (Acrylonitrile Butadiene Styrene + Anti-Static Additive) Cover: CAB (Cellulose Acetal Butyrate)

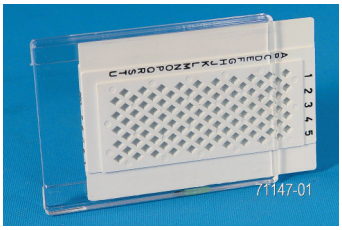
Cat. No.	Description	Qty.
71135-01	SB50 Grid Storage Box	each
71135-12	SB50 Grid Storage Box	12/bx
71136-01	SB50N Grid Storage Box with Unique Number	each
71136-12	SB50N Grid Storage Box with Unique Number	12/bx

GRID PREPARATION SUPPLIES AND ACCESSORIES

Grid Storage & Transport (continued)

THE ORIGINAL LKB Grid Storage Box

For years, The LKB Grid Storage Box is the one that everyone is looking for. Now it is available again from EMS. The box is made from ABS (a copolymer of Acrylonitrile, Butadien and Styrene) which will not tolerate temperatures above 70˚C, while the lid is made of Polymethacrylate (Flexiglas, Perspex), which should not be exposed to temperatures above 45˚C. Neither the box or the lid will resist organic solvents. The box consists of 100 diamond shaped holes for storing up to 100 EM grids, either 3.05mm or 2.3mm in diameter. The box measures 3" (75mm)(L) x 2⅛"(55mm)(W) x ¼"(7mm)(H) and it comes complete with 10 index cards.



71147-01	LKB 100-Grid Storage Box	each
71147-12	LKB 100-Grid Storage Box	10/pk

EMS 50 and EMS 100 Capacity Inexpensive Grid Storage Boxes

The EMS50 and EMS100 TEM Grid Storage Boxes are used for the storage of TEM grids for routine grid handling, transport and long term TEM grid storage for standard grids that are 3.05mm in diameter.

The box has a simple number/letter combination printed on the side of the body. Dimensions for both boxes are: 3"(75mm) x 2⅛"(55mm) x ¼"(6.5mm) and they are anti static treated.

71146-01

71146-02

71146-01	EMS 50 Grid Box	each
71146-02	EMS 100 Grid Box	each

Dial-A-Grid Storage Modules

A two tone color coded plastic box with insert which has 24 letter-labeled crossed slots, where the grids can be stored. A rotating protection plate covers the slots and allows for exposure of one grid at a time.

Measures: 2⅛"(L)x1¾"(W)x½"(H) (57x45x12.5mm)

71148-01

71148-01	BEEM® Dial-A-Grid Storage Box	each
71148-05	BEEM® Dial-A-Grid Storage Box	50/pk
71148-10	BEEM® Dial-A-Grid Storage Box	100/pk

Beem® Is A Registered Trademark of Better Equipment For Electron Microscopy, Inc.

BEEM® Dial-A-Grid and Block Storage Modules

The same as Dial-A-Grid Module but with two additional cavities for block storage.

71149-01

71149-01	BEEM® Dial-A-Grid & Block Storage	each
71149-05	BEEM® Dial-A-Grid & Block Storage	50/pk
71149-10	BEEM® Dial-A-Grid & Block Storage	100/pk

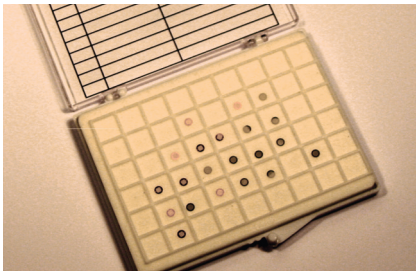
Beem® Is A Registered Trademark of Better Equipment For Electron Microscopy, Inc.

EMS Dial-Grid-N-Block-Storage

24 slots labeled with letters from A-X where the grids can be stored and rotated for easy access as well as 3 additional cavities for block storage. Available with and without a unique identification number.

71158-01

71158-01	EMS Dial-Grid-N-Block Storage	each
71158-05	EMS Dial-Grid-N-Block Storage	50/pk
71158-10	EMS Dial-Grid-N-Block Storage	100/pk
71158-15	EMS Dial-Grid-N-Block Storage/With Number	each
71158-20	EMS Dial-Grid-N-Block Storage/With Number	50/pk
71158-25	EMS Dial-Grid-N-Block Storage/With Number	100/pk



Grid Transporting Box

This unique Box allows for the storage and transportation of grids without any worry of them moving around or being damaged. The Plate is made from Silicone and has 54 individual compartments 10mm in size. Each compartment can hold 3 grids and the grids can be easily picked up from the Silicone surface.

71173-01	Grid Transporting Box	each

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GRID PREPARATION SUPPLIES AND ACCESSORIES

Grid Storage & Transport (continued)

Cryogenic Grid Storage Boxes

These specimen grid boxes are tools for storing or transferring cryogenic TEM specimen grids.

- **Four diamond shaped slots**
- **Non-static clear covershield held in place with stainless steel screw, which is tapped in the center of the box**
- **Box fits the FEI Vitrobot™, Gatan 626™, Gatan 3500™**
- **Available with lid, pin-type lid, or without lid**

Cat. No.	Description	Qty.
71166-10	Cryo Grid Box, Round, w/Lid	each
71166-10-W	Cryo Grid Box, Round, w/Lid, White	each
71166-20	Cryo Grid Box, Square, w/Lid	each
71166-30	Cryo Grid Box, Round, wo/Lid	each
71166-40	Cryo Grid Box, w/Pin Type Lid for FEI Vitrobot	each
71166-50	Cryo Grid Box, w/Pin Type Lid	each
71166-60	Cryo Grid Box, w/Lid, Sq for Gatan CT3500	each

Gripper Tool for Cryo Grid Boxes

Use this tool to open the lid of our cryogrid box (EMS Cat. #71166-40). It features a spring loaded vise that grips the lid securely and a ribbed barrel for ease in unscrewing the lid. Made of high quality aluminum, it can be used with liquid nitrogen. Can also be used to carry the cryo grid box.

Cat. No.	Description	Qty.
71166-SP	Gripper Tool for Cryo Grid Boxes	each

Cryogenic Grid Box Handling Tool

This tool has one end which is threaded and fits into the center hole of the Cryogenic Grid Storage Box (where the screw goes in to secure the lid) for moving the box in and out of the cryogenic chamber.

Cat. No.	Description	Qty.
71165-50	Cryogenic Grid Box Handling Tool	each

Vitrobot™ Filter Paper

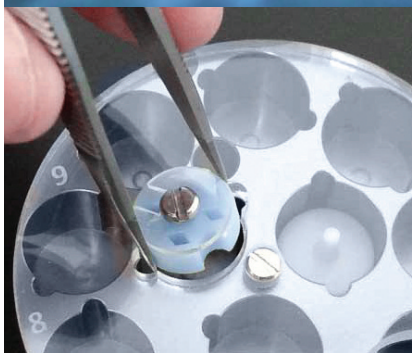
This special Filter Paper has an outer diameter of 55 mm, with an inner diameter of 20 mm. Made from Grade 595 paper.

Cat. No.	Description	Qty.
71166-65	Vitrobot™ Filter Paper	100/pk

EMS Cryo Pucks

Organized storage and transport for Cryo-EM specimen grids under cryogenic conditions

- **12 wells per puck for Cryo Grid Boxes**
- **Each puck has a unique alpha-numeric code for easy identification**
- **Indexed wells for sample tracking**
- **Holds round Cryo Grid Boxes**
- **Puck depth accomodates pin type lid style Cryo Grid Boxes**
- **When using Cryo Grid Boxes with flat-style lids, you can store up to 24 Cryo Grid Boxes per puck**
- **Special tweezer slots allow easy and secure removal of Cryo Grid Boxes**
- **Shelved shipping Cane holds up to seven pucks**
- **Shelved Storage Cane**



Special tweezer slots allow easy and secure removal of Cryo Grid Boxes.

71168-01 — EMS Cryo Pucks Complete Set
(7) EMS Cryo Pucks, (1) Shelved Puck Shipping Cane, (1) Shelved Storage Cane, (1) Angled Cryo-Tongs, (1) Protective Storage Case

71168-09

71168-10

71168-12

71168-13

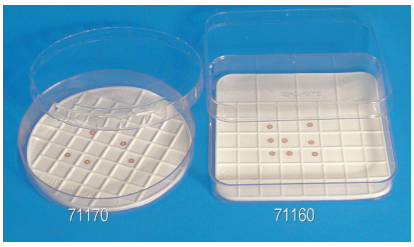
Cat. No.	Description	Qty.
71168-01	EMS Cryo Pucks Complete Set *Includes: (7) EMS Cryo Pucks, (1) Shelved Puck Shipping Cane, (1) Shelved Storage Cane, (1) Angled Cryo-Tongs, (1) Protective Storage Case*	set
71168-02	EMS Cryo Pucks	each
71168-07	EMS Cryo Pucks	7/pk
71168-08	EMS Cryo Puck Storage Case	each
71168-09	Shelved Storage Cane (holds 10 pucks)	each
71168-10	Double Puck Loading Dewar with Lid	each
71168-11	Bent Cryo Tong	each
71168-12	Shelved Puck Shipping Cane	each
71168-13	Cryo Express Dry Shipper with Case	each

GRID PREPARATION SUPPLIES AND ACCESSORIES

Grid Staining and Mounting

Grid Mats

White silicone rubber mats, with numbered compartments. Good for organizing grids. They will not slide or jump between compartments. Also ideal for staining grids. Easy to pick up grids without damaging forcep tips. Mats are available for square and round petri dishes, (100mm diameter, 115mm high).

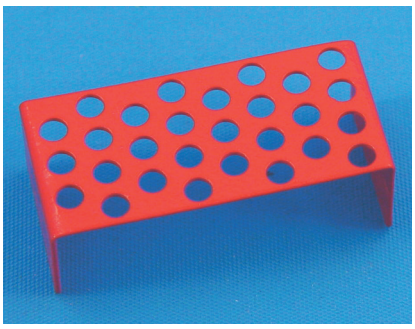


71160	Square Grid Mat	each
71162	Square Grid Mat	1 dozen
71170	Round Grid Mat	each
71172	Round Grid Mat	1 dozen

EMS Domino Rack

The EMS Domino rack is "U" shaped and made from an aircraft alloy sheetstock with serial perforations; thermally bonded spaceage copolymer; 5mm diameter holes, 28 holes per rack. The formvar film cast on the rack will stretch across a series of smooth edged holes forming a flat, wrinkle free film that is ready for grid mounting.

The Domino Rack allows the sections within the slot to dry flat and wrinkle free; it reduces the film and section contamination to negligible levels. The size of the rack is 54mm (L) x 17.5mm(H) x 25.5mm (W) Moran, D.T., and Rowley, J.C., (1987). "Biological Specimen Preparation for Correlative Light and Electron Microscopy in Biology: Microscopy and Methods, ed. M.A. Hayat. Academic Press, New York./ pg 1-22



70620	EMS Domino Rack	each
70621	EMS Domino Rack	10/lot

Grid Staining Matrix System

This unique staining device allows you to stain up to 25 grids at one time or as little as one The Matrix system has a simply alpha-numeric identification system. The unit is not solvent or chemically resistant to acids so all stains should be aqueous based only.

The system requires very little stain and you may use different vessels for each stain.

The amount of Volume of stain required is as follows:

21–25 grids 11ml **11–15 grids 7ml** **01–05 grids 3ml**
16–20 grids 9ml **06–10 grids 5ml**

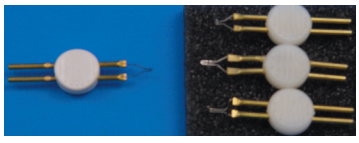
Each system includes the following:
- *Matrix Body*
- *2 each of the Staining Vessels (Red and Blue)*

71179-01	Grid Staining Matrix System Kit	each
71179-05	Matrix Body with handle and cover	each
71179-06	Staining Vessels, 1 red and 1 blue	2/pk
71179-07	Staining Vessel, blue	each
71179-08	Staining Vessel, red	each

Hot Pen – Wax Pen; A Tool for Separating Sections or Cauterizing

Powered by AA batteries. This pen helps to flatten and separate tissue sections and reduces compression in thin sections. Available in two models: Wax Pen 1 is powered by one AA battery; Wax Pen 2 is powered by two AA batteries. Both pens are using the same tip. Replacement tip (Cat. #72679-RT) is a straight one. Replacement tip (Cat. #72679-03) is a set of three different configurations: Straight, Hook, and 'U' Shaped Tips.

72678



72679

Cat #	Description	Length with Tip w/o Cap	w/Cap	Diameter	Pack
72678	Wax Pen 1 (A)	6½"	6¾"	¾", 18mm	each
72679	Wax Pen 2 (B)	8¼"	8¾"	¾", 18mm	each
72679-RT	Replacement Tip				each
72679-03	Replacement Tips		Set of Three Variable Tips		

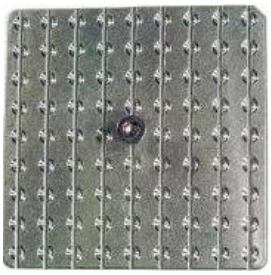
Grid Coating Pen For TEM; Coat Quick "G"

The Coat-Quick "G" pen improves the adherance of tissue sections onto the grids. With a touch of the pen to the grid, a thin layer of coating is applied to the grid. Drying takes place in approximately 1-2 minutes at room temperature. After it has dried the grid is ready for tissue mounting. The pen is also used in pretreating grids prior to mounting supporting films such as formvar and carbon; it minimizes dislodging, widening, or breaking of the support film.

70624	Grid Coating Pen	each

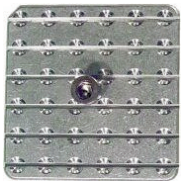
Electron Microscopy Sciences In PA: (215) 412-8400 • Toll-Free (800) 523-5874
Fax (215) 412-8450 or 8452 • email: info@emsdiasum.com or stacie@ems-secure.com • www.emsdiasum.com

EMS Grid Prep Holders



Electron Microscopy Sciences introduces unique preparation trays which may be used for staining and/or placing an evaporator for the coating of grids.

The trays have a M4 tapped hole in the center which allows for insertion of pin mount. They also have a screw pin in the middle that may be used as a handle for manipulating the trays.



They are made from medical grade aluminum and come in a plastic storage box.

Available in two sizes:

36 capacity: measures 1.688" (L) x 1.688" (W) x 0.250" Thick (43 mm x 43 mm x 6 mm)

81 capacity: measures 2.563" (L) x 2.563" (W) x 0.250" Thick (65 mm x 65 mm x 6 mm)

Cat. No.	Description	Qty.
71175-01	EMS Grid Prep Holder, 36 Capacity	each
71175-02	EMS Grid Prep Holder, 81 Capacity	each

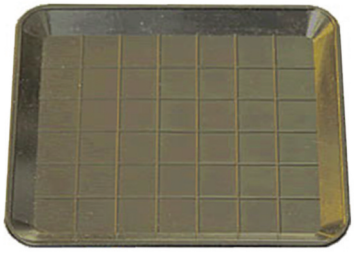
Grids Staining Pad

Observing the ultrastructure of cells under an electron microscope is an important aspect of biological research, especially in the neurosciences.

Unfortunately, preparing a sample for a transmission electron microscope is a long and difficult process. This product was designed to simplify the preparation of samples and make the process more time efficient.

Cat. No.	Description	Qty.
71187	Grids Staining Pad	kit

Picking Trays



These unique trays, which are available in either black rigid ABS plastic or aluminum in black or tan.

The trays feature 42 cells with a lip differentiating each cell. The cells measure 11 mm x 11 mm (7/16 x 7/16").

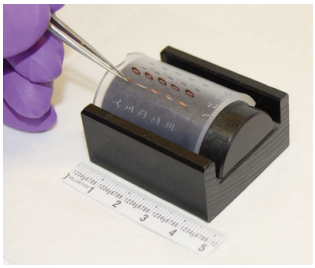
Tray measures 96 x 34 mm (3.78 x 1.34").

Trays perfect for placement of grids and storage of small components.

Cat. No.	Description	Qty.
71171-01	Picking Tray, Black ABS Plastic	each
71171-02	Picking Tray, Black Metal	each
71171-03	Picking Tray, Tan Metal	each

Modified Hiraoka Staining Kit

EMS is proud to introduce a modified Hiraoka Staining Kit that can stain up to 20 grids at a time. This kit encompasses all of the amazing qualities of the original Hiraoka Staining Kit with the enhanced features of the ability to autoclave and microwave the staining tray as well as the staining tray insert. The modified plate holder as well as the parafilm well holder are made from Delrin, while the staining tray and staining tray insert are made from polypropylene. (Chemically resistant, autoclavable, and microwave safe.)



Kit includes: Modified Hiraoka Staining Tray (6), Modified Plate Holder, Parafilm Well Holder, Staining Tray Space Insert (2), Grid Support Plate (2), Parafilm.

Dimensions of kit contents are as follows:

Modified Staining Tray: 46 x 46 x 11.5mm (1¾ x 1¾ x ½") thick
Modified Plate Holder: 45 x 38 x 32mm (1¾ x 1½ x 7/32") thick
Parafilm Well Mold: 53 x 40 x 17.5mm (2⅛ x 1½ x ¾") thick
Staining Tray Space Insert: 29 x 14 x 4.5mm (1½ x ⅝ x 5/32") thick

1560-10

71560-20

71560-30

71560-31

71560-32

70991-SP

Citations

Hiraoka JI. A holder for mass treatment of grids, adapted especially to electron staining and autoradiography. Stain Technology 1972; 47:297-301.

Seifert, P. Modified Hiraoka TEM grid staining apparatus and technique using 3D printed materials and gadolinium triacetate tetrahydrate, a nonradioactive uranyl acetate substitute. Journal of Histotechnology. 2017. 40 (4):130-135.

Cat. No.	Description	Qty.
71560-00	Modified Hiraoka Staining Kit	kit
71560-10	Modified Staining Tray	each
71560-20	Modified Plate Holder	each
71560-30	Parafilm Well Mold	each
71560-31	Staining Tray Space Insert	each
71560-32	Grid Support Plate	each
70991-SP	Parafilm M	5/pk

GRID PREPARATION SUPPLIES AND ACCESSORIES

TECHNICAL TIP

A Fool-proof Method for Mounting Serial Sections on Single Hole Grids

I did serial sectioning for years on large single hole grids using a very simple technique that made the potential problems of film thickness, wrinkles and section loss very minor. I was not the original developer of the method and do not remember who originally gave it to me. It goes as follows:

1) Have your machine shop cut some thin pieces of Plexiglas into the size of glass slides. At one end, drill about a dozen holes, roughly 5mm in diameter, in an area about the size of a formvar film cast on glass slides. These slides will serve as your template for holding your films.

2) Cast the formvar films onto glass slides using your normal method. Usually a good silver film, not gray, will work fine I routinely used 0.2% formvar in dichloroethane when casting by immersing the slide into the solution in a small jar, etc. We now use a film caster that lets us hold the slide in the dichloroethane vapors after lowering the formvar solution level This method tends to give you thinner films consistently so the correct solution percentage and timing would have to be redetermined.

3) Float the film off the glass slide and pick it up with the Plexiglas slide so the film covers the holes. Then draw the water out of the holes by pressing the plastic slide down onto filter paper, or using small pieces of filter paper and capillary action to draw the water out of individual holes. The films should hold nicely over the holes in the slide. Store slides until needed.

4) Next, cut your sections using a block diameter that is fairly similar to the size of the slit in the grid. Pick up the sections on UNCOATED grids by gently lowering the grid to the surface of the knife boat. I put the dull side down on the premise that the rough surface would grab the film better during step 6. The surface tension of the water will hold the sections in the grid opening. Transfer the grid to a droplet water until you have finished sectioning. Do invert grid. It important the of grid (shiny side) stay dry so that the grid will float on all subsequent solutions.

5) Transfer the grid + sections + water droplet to a drop of stain. A small amount of water will be transferred but this will not interfere with staining. If you are concerned about the dilution effect, increase your staining time slightly. Allow the section to stain, then wash by transferring through a series of droplets of clean water. Continue to if desired and wash the same way. Never let the grid dry. There is minimum problem with stain precipitation if you use very clean water and transfer the grid through a sufficient number of water droplets (6-12 recommended).

6) The final step is to transfer the grid to a film suspended over the hole in a Plexiglas slide and let it dry down. The sections will now be stuck to the film with NO wrinkles and minimum breakage. When ready to view, just punch out around the grid with the tip of your forceps, grab the grid and insert into the microscope.

Believe me....the sections will still be there at the end!

I found that as long as the sections cover a substantial portion of the open area of the grid, carbon coating was not essential. I used to do 50-100 grids worth of serial sections without loosing any. The films on the plastic slides would hold for months so I could make a lot and store until needed.

Previously Published in: Sherman, D.M. (1998) A Full-proof Method for Mounting Serial Sections on Single Hole Grids. MSA Technologist's Forum Newsletter 16:2

Plexiglas Microscope Slides

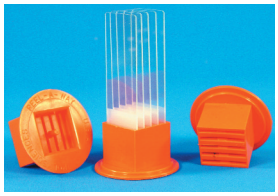
A Fool-Proof method for the mounting of serial sections on Single Hole Grids

These plexiglass slides are 3 x 1" (75-25mm) and 1 mm thick. They prevent wrinkling and section loss while mounting sections on the grid. The procedure is simple

71891-10	Plexiglass Microscope Slides	5/pk

Grid Staining and Mounting (continued)

Five-Slide Gripper



- **The Five-Slide Gripper accommodates five microscope slides in one staining procedure.**
- **Fits most coplin and round-open staining jars.**
- **No need to remove slides for drying.**
- **Made from a special material which is resistant to all chemicals and solvents which are used in staining.**
- **Withstands drying temperatures up to 80°C**

71410-06	Five-Slide Gripper	6/pk

Film Casting Device

An all glass apparatus. It casts uniformly thin films of parlodion, formvar, or butvar directly onto 1x3 microscope slides. The film casting solution can be used repeatedly. A built-in fine-pressure-release valve helps control the speed of drainage. The thickness of the film is controlled by the concentration of the film solution and the rate of the drainage. The unit requires 100mls of film casting solution to start.

The unit comes complete with:

- **500 ml capacity flask with built-in valves; Air-in and Air-out.**
- **Film casting Cylinder with Cover.**
- **75 cc Atomizer.**

71305-01	Complete Film Casting Device	each
71305-04	500 ml Flask Replacement	each
71305-06	Film Casting Cylinder Replacement	each
60804	Atomizer Replacement	each

All Glass Nebulizer

An all glass unit for the simple production of microdroplets. An object is held vertically in front of the nebulizer outlet and by squeez-ing the atomizer a fine spray is created. The nebulizer set comes with an All Glass Nebulizer bulb and Atomizer.

70505-01	Nebulizer Set	set
70505-05	Nebulizer Set	5 sets
70506-01	Nebulizer Only	each
70506-05	Nebulizer Only	5/pk
60804	Atomizer	each

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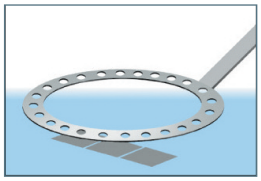
Fax (215) 412-8450 or 8452 • email: info@emsdiasum.com or stacie@ems-secure.com • www.emsdiasum.com

Perfect Loop

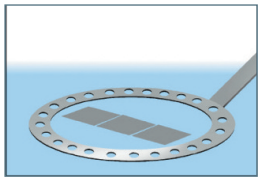
Using this PERFECT LOOP, you can place your thin sections, cut on the ultramicrotome, easily on the grid mesh without creases.

EMS EXCLUSIVE

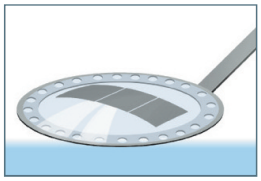
The Perfect Loop allows you to pick up sections consistently without causing any damage to the sections. It is the only loop that is currently available where the outside diameter of the loop is the same as the grid and the inside diameter is slightly larger than the observation area of the electron microscope. The thickness is about 40 microns. Due to the fact that the loop and the grid are of the same diameter they are attracted to one another when in water and attach together through the surface tension of the water. Even if the section touches the inside of the grid during blotting the touching area is minor and, therefore, the section is not damaged. When the grid is removed from the loop the section remains in place without fail. The area equals the observation field (about 2mm diameter) of the electron microscope; thus pieces can be fully observed.



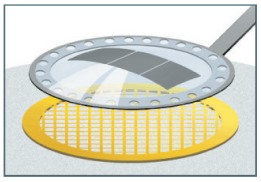
1. Center the LOOP above the sections



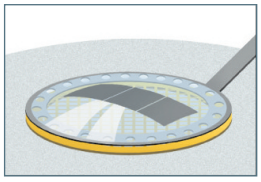
2. Slowly lower the LOOP over the sections and touch the water.



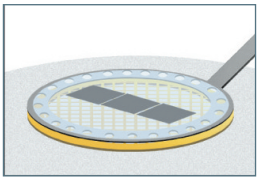
3. Gently lift up the LOOP with the sections in a droplet of water



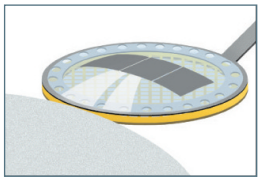
4. Lower the LOOP onto a grid and lift up again.



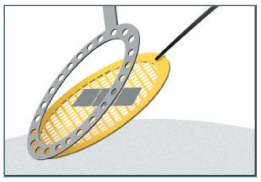
5. The grid holds to the LOOP by surface tension.



6. Lower the LOOP to the filter paper to remove water.



7. For coated grids, touch with filter paper to remove water.



8. Separate the grid from the LOOP with an eyelash.

Perfect Loop for Ultra thin sections

70944	Set of Handle & Loop	set
70945	Loop only	each
70946	Loop only	5/each
70948	Handle only	each

Perfect Loop for Light Microscopy (large sections)

The outside diameter of the loop is 7mm.

70940	LM Set of Handle & Loop	set
70941	LM Loop only	each
70942	LM Loop only	5/each
70943	LM Loop Handle	each

Grid-Stick Kit

A helpful device for multi grid staining. If the instructions are followed carefully you can say good-bye to precipitate and dirt. The Grid Stick is made from a thin, but rigid alloy that does not react with commonly used organic solvents or stains. The stick itself measures 4mm wide, 75mm long and has a slot along its center with small undercut notches on one side to make grid removal simple. A small area on the top of each stick is reserved for identification.

The Grid Stick is coated with a specially-formulated pressure-sensitive adhesive. This adhesive is resistant to solvents used in conventional staining methods (e.g., water, alcohol, ethanol) and aggressively holds the grids in place during staining, emulsion coating, carbon coating, shadow casting, serial section collection, etc., yet will not remain on the grid once it is removed from the stick. During staining the grids are held in the same plane as the solution flow, minimizing the risk of breaking the formvar film and, or collecting surface debris. Grids may be stored, handled, and examined with minimal effort. For example, if your grids are on SynapTek Grid Sticks you can simply place the stick on the stage of a phase microscope, identify the material (you will see outlines of large cells), and determine its condition (i.e., holes in material, dirt on grids) in only a few seconds without disturbing a single grid. In short, you will find that the SynapTek Grid Stick is simple, easy to use, and most importantly, highly reliable.

SynapTek Grid-Stick consists of:

- 5 coated Grid Sticks
- 10 Staining Pipettes (modified)
- 2 flow-limiting Plugs and Bulbs
- Instructions

71175	Grid-Stick Kit	each

Replacement Components:

71176	Grid-Stick, uncoated	10/pk
71177	Staining Pipettes with 2 plugs	20/pk
71178	Grid-Stick Glue (For recoating GridStick)	5ml

GRID PREPARATION SUPPLIES AND ACCESSORIES

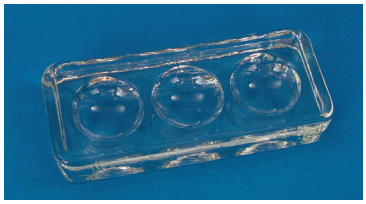
Grid Staining and Mounting (continued)

Micro-Test Staining Dish

This staining dish is made from clear glass and has 10 cells in 2 rows of 5 each. Each cell is 2mm deep and holds 0.15ml of solution. Very useful in specimen preparation, EM staining, and Boerner-Jones-Lukens microfluocculation test. Measurements: 108 X 57mm (4¼" x 2¼").

71564	Micro-Test/Staining Dish	each

3-Well Glass Slide – Micro Spot Plate



Pyrex brand Micro Spot Plate is ideal for microchemical applications. With three concave depressions. Cavities measure ⅞" O.D. x ¼" Deep (22 x 7mm). Plate overall measures 3⅜"(L) x1⅜"(W) (85 x 34mm)

Catalog #		Pack
71561-01	3-Well Slide	each
71561-06	3-Well Slide	6/pk

White Porcelain Plate

12 cavities on a white porcelain plate. Used for staining and color reactions.
They measure: 4⅝"(L)x3½"(W) (118x90mm). Cavity depth: ¼" (6.4mm).

71562-01	White Porcelain Plate	each
71562-06	White Porcelain Plate	6/pk

Glazed Porcelain Plate

Our economical glazed porcelain plate is made from high purity raw material, uniform in quality and resistant to acids and alkalis. It can withstand sudden temperature changes without cracks, explosion or deformation. Under normal conditions, the glazed plate can sustain a temperature of up to 1050° C. Available in two models: 1. 6 well with overall measurements of 3¼"(L) x 2⅛"(W) x ⅜" thick, and 2. 12 wells with overall measurements of 4½" (L) x 3½" (W) x ½" thick.

Cat. #	Description	Well Measures	Pack
71575-06	6-Well	20mm Dia x 5mm Deep	each
71575-12	12-Well	20mm Dia x 5mm Deep	each

12 Cavities Spot Plate, Polypropylene

Very similar to the white porcelain plate, this PP plate comprises 12 cavities of approximately 1ml capacity and is economically priced. This plate is very high quality, unbreakable as well as autoclavable.

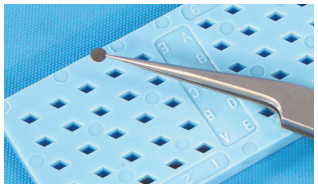
71572-01	12-cavities Spot Plate, Polypropylene	each
71572-10	12-cavities Spot Plate, Polypropylene	10/cs

RELATED PRODUCTS... Sample Preparation, TEM Checker, Membrane Boxes, Gel Boxes

Look for these items and more in our digital catalog, or visit www.emsdiasum.com

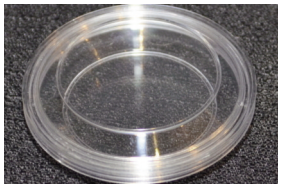
XTEM TEM Sample Preparation Kit

EMS offers this kit specifically for the preparation of cross-sectional TEM (XTEM) specimens.



TEM Checker

Monitor the performance of your x-ray detectors. Contains (5) 3mm dia. manganese disks in a standard grid storage box.



Membrane Boxes

Unique membrane storage boxes for the transfer, storage and shipping of many delicate items. 5 different shapes and sizes.

Gel-Pak® Storage/ Carrier Boxes

Patented gel technology – the innovative solutions for storage and carrying delicate materials.

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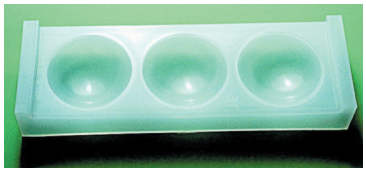
Grid Staining and Mounting (continued)

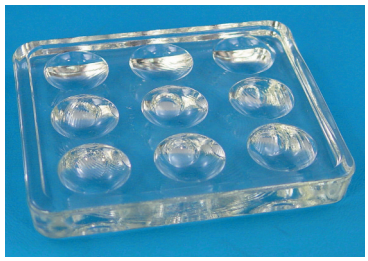
3-Cavities Spot Plates, LDPE



These spot plates have three depressions 21mm diameter x 7mm deep. The tray is 28mm x 85mm. Made from low density polyethylene and will withstand temperatures up to 80° C.

71574-05	3-cavities Spot Plate, Polypropylene	5/pk
71574-40	3-cavities Spot Plate, Polypropylene	40/cs

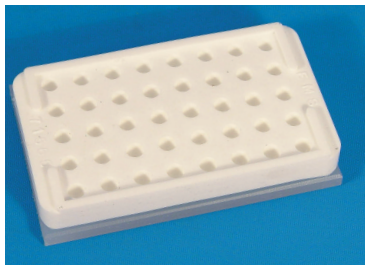
Pyrex® Plate



A 9 cavity Pyrex pressed plate which offers a clear view for observation by transmitted light. The plate measures: 4"(L)x3⅜"(W) (100x85mm). The cavity is ¼" (6.4mm) deep with a ⅞" (22mm) opening.

71563-01	Pyrex Plate	each
71563-06	Pyrex Plate	6/pk

Silicone Staining Pad

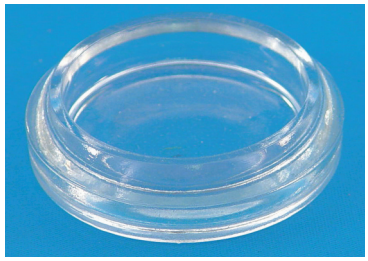


EMS EXCLUSIVE

Made from white silicone, a non-reactive material. Pad has 40 cells in 5 rows of 8 each. Each cell is half-sphere shaped with an opening of 6mm dia. and 5mm deep. A few drops of staining solution is added to the wells and grids are then immersed and retrieved as per staining procedure. A watch-glass plate comes with each dish to reduce oxygen and evaporation. Measures: 5"(L)x3"(W)x ½"(T) (127x76x13mm)

71565	Silicone Staining Pad	each

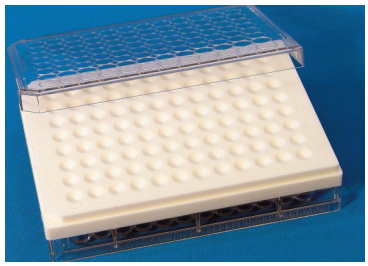
Syracuse Watch Glass



A clear watch glass which measures 65mm(OD)x50mm(ID)x 10mm(Deep). The glass is grooved and has a recessed bottom which allows for stacking and prevents scratching. It is ideal for staining and specimen preparation.

71570-01	Syracuse Watch Glass	each
71570-06	Syracuse Watch Glass	6/pk

The EMS Staining Plate



EMS EXCLUSIVE

The EMS Staining plate for Electron Microscopy was developed by Dr. Miguel Berrios, at SUNY at Stony Brook, Dept of Pharmacological Sciences, School of Medicine, New York.

The chemical etching process, antibody incubations and final staining with heavy metal salts of each grid is performed in the small cone-shaped wells on the EMS staining plate.

The EMS Staining Plate for electron microscopy post-embedding staining and immunohistochemistry offers several advantages over all other commercially available staining devices. The base plate is a solid piece of chemical-resistant silicone 127.5mm long, 85.5mm wide, 11.5mm thick with 96 cone-shaped wells organized (like the microtitration plate) in parallel rows of eight, using the lid of a 96-well Falcon 3072 Microtest™ III Plate as a cover. The base has two notches to serve for orientation and a 1.5mm X 4.4mm deep lip where the cover rests. Each well is an inverted cone 7mm in diameter and 2mm deep. Grids either float or rest at the bottom of each well. The wells allow incubation of a grid in 12-60 microliters of solution without reagent loss due to adsorption or cross contamination, even when the plate is tilted up at 70°. Due to the shape of the well, the flat surface of the grids never come into contact with the walls of the well, both facilitating sample staining and grid recovery.

Plates made from silicone offer two advantages:

- **Resistant to all chemicals and solvents**
- **During manipulation of the grids in the well there is no risk of damaging the fine points of the tweezer.**

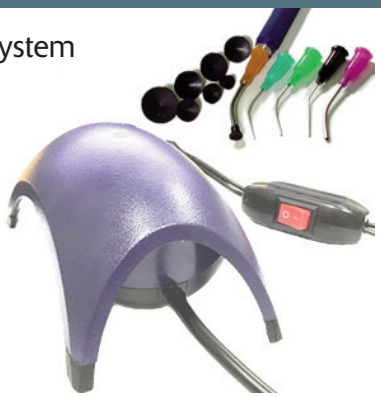
Reference: Berrios, Miguel; (1991), A Staining Plate For Electron Microscopy. 48: 90-92.

71568	EMS Staining Plate	each

GRID PREPARATION SUPPLIES AND ACCESSORIES

Vacuum Systems

Vacuum Pick Up System



Handle delicate miniature objects without scratching, breaking or pinching. The system avoids contamination of parts and performs functions that tweezers does such as sorting, picking up, holding, carrying, and transferring. As well it is an alter-native way for handling cover slips without the use of forceps.

- **Picks up grids faster and easier than tweezers – WARNING: Never use this device on coated grids**
- **Quiet operation**
- **Eliminates all tweezer damage to grids**
- **Good suction (produces 14" Hg vacuum and an air flow of 125 cubic inches/minute); Can pick up aluminum stubs**
- **Can be used as a tool to pick up glass slides, cover slips, wafers, thin film samples, etc.**

Double-insulated (115-120V, 60Hz, 2-wire). Light weight, completely assembled and ready for immediate operation as soon as the proper tip is selected and installed. Vacuum is created at the tip by placing the finger over the control hole on the anodized aluminum vacuum pen. To break the vacuum, just remove your finger from the hole.

Vacuum Pick-up System includes:
Vacuum Pick-up System complete set: Vacuum Generator, Aluminum Vacuum Pen, Five Vacuum Tips, Set of seven Rubber Vacuum Cups (size ranging: 9/16", ½", 7/16", ⅜", 5/16", ¼" and 3/16"), an In-Line Filter, and 4 ft (122 cm) of Vacuum Tubing.

Cat. No.	Description	Qty.
71894	Vacuum Pick-Up System, 115V/60Hz	each
71895	Vacuum Pick-Up System, 220/60Hz	each
71896	Vacuum Generator 115V	each
71897	Vacuum Generator 220V	each
71894-01	Vacuum Pick-up Pen only	each
71904-02	Vacuum in-line-filter ⅜" x 1½"	each
Vacuum pick-up tips, Stainless steel, 1.5" long:		
71898	12 gauge, 0.109" (O.D.); 0.085" (I.D.)	each
71899	16 gauge, 0.065" (O.D.); 0.047" (I.D.)	each
71900	18 gauge, 0.050" (O.D.), 0.033" (I.D.)	each

Cat. No.	Description	Qty.
71901	20 gauge, 0.035" (O.D.), 0.022" (I.D.)	each
71902	25 gauge, 0.020" (O.D.), 0.095" (I.D.)	each
71903	Vacuum suction cups 0.500" diameter	each
71904	Vacuum suction cups 0.250" diameter	each
71905	Vacuum suction cups 0.164" diameter	each
71906	5⁄16" (7.94mm) Vacuum Suction Cup	each
71907	¼" (7.94mm) Vacuum Suction Cup	each
71909	Set of 7 Rubber Cups (9/16", ½", 7/16", ⅜", 5/16", ¼", and 3/16")	7/set

Pen Vac™

Pen-Vac™ is a new improved way to handle small, flat surface objects. Pen-Vac is ideal for EM work. It can be used to handle grids, pick up stubs, align membranes, work with glass slides, cover slips and much more. Holds up to one minute.

71915 - PenVac with Deluxe Storage Case

71914 - Complete Pen-Vac System

- **Lifts up to 50 grams.**
- **Totally self-contained vacuum.**
- **Light-weight, less than 1oz.**
- **Fits in your pocket like a pen.**
- **Brushed aluminum body.**
- **Optional storage compartment for vacuum tips and cups.**
- **No power supply needed.**
- **Available in various sizes.**
- **Interchangeable vacuum probes.**

Pen-Vac™ comes with:

- **A variety of vacuum probes, with an attached vacuum cup and it is available with plastic or aluminum hubs. Straight and angled to suit your applications. The stainless steel needle portion of the probes are one-half inch long.**
- **We offer the Static Dissipative and Conductive Cups that provide ESD protection for electrostatic discharge of sensitive components. Cups comes in three sizes: ⅛" (3.17mm); ¼" (6.35mm); and ⅜" (9.52mm).**

Set consists of: One Pen with 6 Probes and Cups. (6 Probes: 3 angled, ⅛", ¼", ⅜" and 3 straight ⅛", ¼", ⅜")

71914	Complete Pen-Vac System	set
71915	Same as 71914 with Deluxe Case	set
Probes and Cups:		
71916	⅛" Straight and Bent, Small	2/pk
71917	¼" Straight and Bent, Medium	2/pk
71918	⅜" Straight and Bent, Large	2/pk

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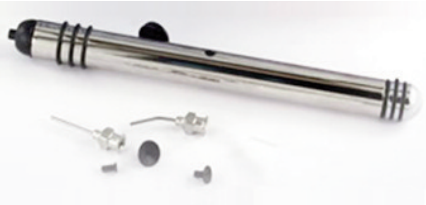
Vacuum Systems (continued)

ESD Vacuum Tool

Battery-free, hand-held vacuum pick up pen designed for the safe pick-up of SMD components during assembly, test and rework processes. With fountain-pen dimensions, Vampire grabs, lifts and places components in complete safety, aided by a powerful internal piston and a full ESD protection.
A complete choice of tips designed for any size of SMD component helps the operator to have always the right tool in hand. Includes: pen, conductive metal straight needle, 45° angled metal needle, conductive rubber cup 4mm, conductive rubber cup 6mm, conductive rubber cup 9 mm, and lubricant kit.



Cat. No.	Description	Qty.
71927-01	ESD Vacuum Tool Kit, **includes:** vacuum pen, straight conductive metal needle, 45° angled conductive metal needle, conductive rubber cup 4mm, conductive rubber cup 6mm, conductive rubber cup 9mm	kit
71927-02	ESD Vacuum tool replacement set: **includes:** straight conductive metal needle, 45° angled conductive metal needle, conductive rubber cup 4mm, conductive rubber cup 6mm, conductive rubber cup 9mm	set
71927-03	ESD Vacuum tool replacement set: **includes:** conductive rubber cup 4mm, conductive rubber cup 6mm, conductive rubber cup 9mm	set

Cat. No.	Description	Qty.
71927-04	Spare ESD 4mm cups	each
71927-05	Spare ESD 6mm cups	each
71927-06	Spare ESD 9mm cups	each
71927-07	Straight needle, ESD 4mm cup	each
71927-08	Straight needle, ESD 6mm cup	each
71927-09	Straight needle, ESD 9mm cup	each
71927-10	45° angle needle, ESD 4mm cup	each
71927-11	45° angle needle, ESD 6mm cup	each
71927-12	45° angle needle, ESD 9mm cup	each

Porta-Wand®

The Porta-Wand kit comes with a non-removable 9.6V NiMH rechargeable battery and in-stand charger. Easy push-button on/off control. Replaceable internal air filter is accessible from the front of the tool. Internal exhaust filter ensures better than Class 1 performance. Indicator Light flashes when battery needs to be recharged, and also turn on when proper vacuum has been established.

SPECIFICATIONS:

Battery	Type: 9.6V NiMH, Rechargeable, Non-Removable Charge Time: 2 hrs.; Continuous Run Time: 2-3 hrs. Recharges: Up to 1000 Replacement: Factory Replaceable
Vacuum	15 to 20" of mercury (atmospheric pressure and elevation dependant)
Measurements	Wand: 7 x 1.2 x 0.85" (178 x 30 x 21mm) Stand: 4.5 x 2 x 3.5" (114 x 51 x 98mm)
Weight	Porta-Wand: 5.44 ounces (154 grams) Charger Stand: 10.5 ounces (298 grams) Transformer: 16 ounces (454 grams)
Operating Temp	10°C to 45°C
Charger Power Requirements	Supplied In-Stand Charger; Wall plug-in power supply 24 VDC @ 500ma. Barrel jack size 5.5mm OD x 2.1mm ID. Center pin positive.

Cat. No.	Description	Qty.
71928	Porta-Wand for up to 4" (100mm) wafers, with ESD-safe flat wafer tip and 115V In-stand Charger	each
71928-01	Porta-Wand for up to 6" (150mm) wafers, with ESD-safe flat wafer tip and 115V In-stand Charger	each
71928-02	Porta-Wand for up to 8" (200mm) wafers, with ESD-safe flat wafer tip and 115V In-stand Charger	each
71928-03	Porta-Wand for up to 12" (300mm) wafers, with ESD-safe flat wafer tip and 115V In-stand Charger	each
Porta-Wand with hard anodized wafer tip		
71928-04	Porta-Wand for up to 6" (150mm) wafers, with hard anodized wafer tip and 115V In-stand Charger	each
71928-05	Porta-Wand Air Intake Filters	5/pk

Porta-Vac®

The Porta-Wand kit comes with a non-removable 9.6V NiMH rechargeable battery and in-stand charger. Easy push-button on/off control. Replaceable internal air filter is accessible from the front of the tool. Internal exhaust filter ensures better than Class 1 performance. Indicator Light flashes when battery needs to be recharged, and also turn on when proper vacuum has been established.

SPECIFICATIONS:

Battery	Type: 9.6V NiMH, Continuous Run Time: 3-4 hrs. Type: 9V Alkaline, Continuous Run Time: 12-15 hrs. Type: 9V Carbon, Continuous Run Time: 4-5 hrs. Type: 9V Lithium, Continuous Run Time: 36-40 hrs.
Vacuum	15 to 20" of mercury (atmospheric pressure and elevation dependant)
Measurements	Wand: 7.3 x 1.1 x 0.80" (185 x 28 x 20mm) With Rechargeable Battery: 7.92 x 1.1 x 0.80" (200.23 x 28 x 20mm)
Weight	With Battery: 6.03 ounces (171 grams)

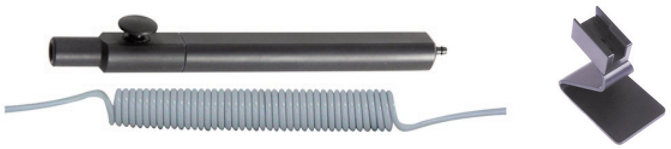
Cat. No.	Description	Qty.
71929	Porta-Vac II for up to 4" (100mm) wafers, with Molded PEEK wafer tip and 9V Disposable Battery	each
71929-01	Porta-Vac II for up to 6" (150mm) wafers, with Molded PEEK wafer tip and 9V Disposable Battery	each
71929-02	Porta-Vac II for up to 8" (200mm) wafers, with Molded PEEK wafer tip and 9V Disposable Battery	each
71929-03	Porta-Vac II 115V In-stand Charger and 9.6V Rechargeable NiMH Battery	each
71929-04	9.6V Rechargeable NiMH Battery	each
71929-05	Porta-Vac II Air Intake Filters	5/pk

GRID PREPARATION SUPPLIES AND ACCESSORIES

Vacuum Systems (continued)

ExP Vacuum Wand Kit

ExP Vacuum Wand Kits are a lower cost alternative to the Porta-Wand and Porta-Vac II systems, which share the same tips. Has a push-button to close the vacuum and release the wafer. The included stand keeps the button pressed when the wand is not in use. Comes complete with an ⅛" Inner Diameter coiled vacuum hose and a wafer tip. Must use a vacuum pump or vacuum line. Able to be used with our Vacuum Pick Up System.



Cat. No.	Description	Qty.
71932	ExP Vacuum Wand Kit for up to 4" (100mm) wafers, with Molded PEEK wafer tip, 1/8" coiled hose and stand	each
71932-01	ExP Vacuum Wand Kit for up to 6" (150mm) wafers, with Molded PEEK wafer tip, 1/8" coiled hose and stand	each
71932-02	ExP Vacuum Wand Kit for up to 8" (200mm) wafers, with Molded PEEK wafer tip, 1/8" coiled hose and stand	each
71932-03	ExP Vacuum Wand Kit for up to 12" (300mm) wafers, with Molded Flat wafer tip, 1/8" coiled hose and stand	each
71932-04	ExP Push Button Wand for 1/8" coiled hose	each
71932-05	Push Button Wand Holder	each

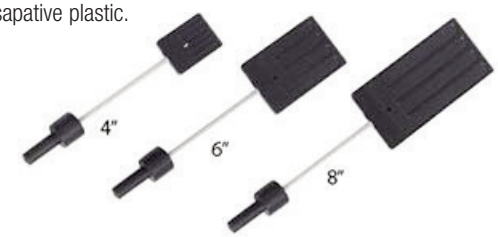
Molded PEEK ESD-Safe Wafer Tips

Made from PEEK, a high performance plastic and are able to be used in Porta-Wand, Porta-Vac II, and EMS Vacuum Wand Kits. Withstand temperatures up to 100°C. Thin profile to allow easy access to wafers.

Cat. No.	Description	Qty.
71935	Molded PEEK Wafer Tip for 4" (100mm) wafers	each
71935-01	Molded PEEK Wafer Tip for 6" (150mm) wafers	each
71935-02	Molded PEEK Wafer Tip for 8" (200mm) wafers	each
71935-03	Molded Flat Wafer Tip for 12" (300mm) wafers	each

Hard Anodized Wafer Tips

Made from hard anodized aluminum, these wafer tips are able to be used in the Porta-Wand, Porta-Vac II and EMS Vacuum Wand Kits. Withstand high temperatures up to 250°C. They feature a 3" long, straight stainless steel tube covered by a PTFE sleeve. The press-fit adapter is made from static dissapative plastic.



Cat. No.	Description	Qty.
71936	Hard Anodized Wafer Tip for 4" (100mm) wafers	each
71936-01	Hard Anodized Wafer Tip for 6" (150mm) wafers	each
71936-02	Hard Anodized Wafer Tip for 8" (200mm) wafers	each

Handi-Vac® Vacuum Cup

The Handi-Vac®-2 has an improved tip designed for better lifting capacity utilizing larger, non-marking vacuum cups. This new tip also enhances functionality and improves accuracy when picking and placing parts. It can be purchased with one static-dissipative cup available in three sizes: ", ½" and ". The entire vacuum tool is ESD-safe.

Cat. No.	Description	Qty.
71921-01	Handi-Vac-2, " (9.53mm) Vacuum Cup	each
71921-02	Handi-Vac-2 With ½" (12.7mm) Vacuum Cup	each
71921-03	Handi-Vac-2 With " (15.88mm) Vacuum Cup	each

Handi-Vac® Squeeze Bulb

The Handi-Vac® Squeeze Bulb Kit is a versatile, cost-effective vacuum tool system that should be on every tool-bench.

FEATURES:

- **(1) 1/8" vacuum cup on bent probe**
- **(1) 1/4" vacuum cup on bent probe**
- **(1) 1/8" vacuum cup on straight probe**
- **(1) 3/8" vacuum cup on straight probe**

APPLICATIONS

SMT parts • Metal parts • Plastic parts • Smooth, nonporous-surfaces

This tool can be used with larger rubber vacuum cups ranging in size from 3/32" (2.38mm) to 3/4" (19.05mm) in diameter. Use the larger cups to pick up larger and heavier parts by placing them directly on the Handi-Vac tip without using a probe.

Cat. No.	Description	Qty.
71921-25	Handi-Vac® Squeeze Bulb Kit, includes: (1) 1/8" vacuum cup on bent probe (1) 1/4" vacuum cup on bent probe (1) 1/8" vacuum cup on straight probe (1) 3/8" vacuum cup on straight probe	each

Vacuum Pick-Up Squeeze Bulb

This portable vacuum anti-static pick-up device is ideal for objects ranging in size from 0.200 to 3.00 square inches. Ground strap recommended to ensure static discharge.

Cat. No.	Description	Qty.
71922	Vacuum Pick-Up Squeeze Bulb	each

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