TAAB Filmed/Coated Grids

Formvar Support Films

Quantity	Copper Grid			
	100 mesh	200 mesh	300 mesh	400 mesh
25	F231/025	F218/025	F232/025	F233/025
50	F231/050	F218/050	F232/050	F233/050
100	F231/100	F218/100	F232/100	F233/100
Nickel Grid				
25	F231/N025	F218/N025	F232/N025	F233/N025
50	F231/N050	F218/N050	F232/N050	F233/N050
100	F231/N100	F218/N100	F232/N100	F233/N100
Gold Grid				
25	F231/G025	F218/G025	F232/G025	F233/G025
50	F231/G050	F218/G050	F232/G050	F233/G050

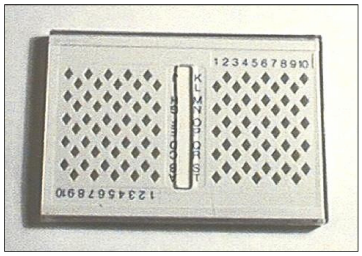
TAAB can offer high quality support films of formvar, formvar/carbon or pure carbon on a wide range of grid styles and makes depending on customer choice.

TAAB **carbon** films are limited to a maximum mesh size of 200 as our experience indicates that larger mesh sizes overstress the carbon and result in splits, tears or other problems either in manufacture, transit or the EM.

Plain **formvar** or **formvar/carbon** can be placed on most types of grid. Please ask for quotation if not listed.

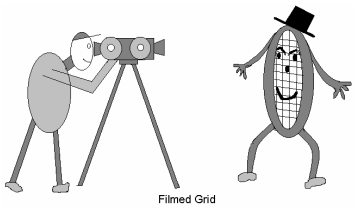
Formvar/Carbon Support Films

Quantity	Copper Grid					
	100 mesh	*100Hex*	200 mesh	300 mesh	400 mesh	*2 x 1mm*
25	F200/025	F180/025	F077/025	F196/025	F098/025	F144/025
50	F200/050	F180/050	F077/050	F196/050	F098/050	F144/050
100	F200/100	F180/100	F077/100	F196/100	F098/100	F144/100
Nickel Grid						
25	F200/N025	F180/N025	F077/N025	F196/N025	F098/N025	F144/N025
50	F200/N050	F180/N050	F077/N050	F196/N050	F098/N050	F144/N050
100	F200/N100	F180/N100	F077/N100	F196/N100	F098/N100	F144/N100
Gold Grid						
25	F200/G025	F180/G025	F077/G025	F196/G025	F098/G025	F144/G025
50	F200/G050	F180/G050	F077/G050	F196/G050	F098/G050	F144/G050



Carbon Support Films

Quantity	Copper Grid					
	100 mesh	*100 Hex*	200 mesh	300 mesh	400 mesh	*2 x 1mm*
1	–	–	C101/001	C267/001	C169/001	–
25	–	–	C101/025	C267/025	C169/025	–
50	–	–	C101/050	C267/050	C169/050	–
100	–	–	C101/100	C267/100	C169/100	–
Nickel Grid						
1	–	–	C101/N001	C267/N001	C169/N001	–
25	–	–	C101/N025	C267/N025	C169/N025	–
50	–	–	C101/N050	C267/N050	C169/N050	–
100	–	–	C101/N100	C267/N100	C169/N100	–
Gold Grid						
1	–	–	C101/G001	C267/G001	C169/G001	–
25	–	–	C101/G025	C267/G025	C169/G025	–
50	–	–	C101/G050	C267/G050	C169/G050	–



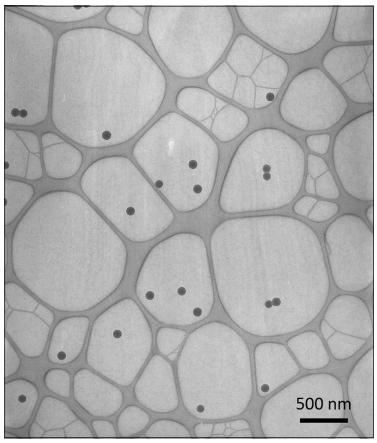
Standard carbon films are ~ 17-20nm thick but 30nm is available on request

For optically flat, mechanically and solvent resistant electron transparent specimen supports, see our Silicon Nitride Windows page 1.27

Also see Quantifoil or C-Flat Ultra Flat Carbon Grids

Grids & Specimen Supports

Ultra-Thin Carbon Films for TEM



Our Ultra-Thin Carbon films on a Lacey Carbon (LC) support were developed to provide users with a high quality robust and uniform continuous film ideal for Cryo-TEM preparation and nanoparticle characterisation such as looking at Nanotubes, virus particles and other small particulate material. A thin layer of Carbon, estimated to be around 5nm thick, is applied on top of a Lacey Carbon film, supported by a 300 or 400 mesh grid. These films are currently available on either Copper or Gold grids in packs of 25. Our Ultra-Thin Carbon films have been confirmed to be stable under TEM operational conditions of 100 and 120 kV for practical use.

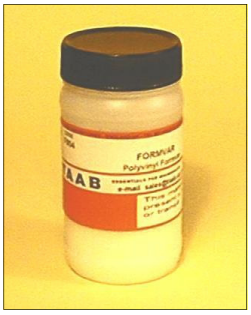
C269/C/UT Ultra-Thin carbon film on LC on 300 mesh **Copper** grid pack of 25
C269/G/UT Ultra-Thin carbon film on LC on 300 mesh **Gold** grid pack of 25
C270/C/UT Ultra-Thin carbon film on LC on 400 mesh **Copper** grid pack of 25
C270/G/UT Ultra-Thin carbon film on LC on 400 mesh **Gold** grid pack of 25

Silicon Monoxide

Mounted on 400 mesh 3.05mm copper grids

For certain applications silicon monoxide offers an exceptionally clean film and being carbon free, is valuable in some microanalysis investigations

S531	Silicon monoxide film on 400 mesh cu grid	50



Film Making Materials

POWDERS

F004	Formvar	100g
F005	Formvar	25g

An alternative support film material to Formvar is Butvar B98 as reported by Handley and Olsen, Ultramicrotomy 4,479 (1979). Exhibits good mechanical and high electron beam stability.

B026	Butvar B98	100g
C282	Collodion	25g

SOLUTIONS

F145/025 Formvar in chloroform 0.25%	100ml
F145/050 Formvar in chloroform 0.50%	100ml
F145/100 Formvar in chloroform 1%	100ml
F145/HAZ Formvar in chloroform****	4 x 25ml
F244/025 Formvar in ethylene dichloride 0.25%	100ml
F244/050 Formvar in ethylene dichloride 0.50%	100ml
F244/100 Formvar in ethylene dichloride 1%	100ml
F244/HAZ Formvar in ethylene dichloride****	4 x 25ml
C171/025 Collodion in amyl acetate 0.25%	100ml
C171/050 Collodion in amyl acetate 0.50%	100ml
C171/100 Collodion in amyl acetate 1%	100ml
C171/200 Collodion in amyl acetate 2%	100ml
C171/HAZ Collodion in amyl acetate ****	4 x 25ml

Other strengths of solution can be made to order, please enquire.

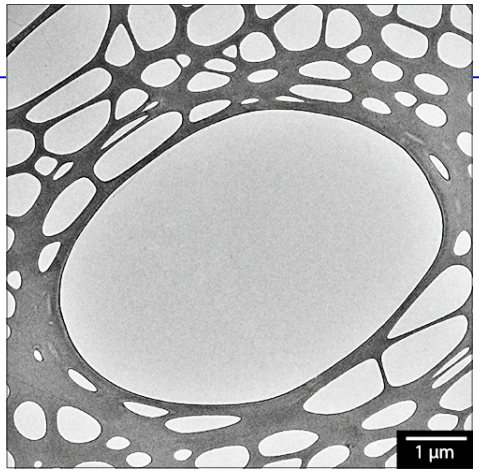
**** Any of the above solutions can be packed in 25ml bottles 4 to a pack to avoid its classification as a hazardous chemical for shipping purposes. Please quote the relevant catalogue number and specify when ordering the strength of solution required.

Phone: +44 (0) 118 981 7775 Fax: +44 (0) 118 981 7881 E-mail: sales@taab.co.uk www.taab.co.uk

Graphene and Graphene Oxide Coated Grids

There are currently two Graphene substrates available - **CVD Graphene** (chemical vapour deposition) and **Graphene Oxide** (GO). Graphene oxide films are typically laid down on lacey carbon films in suspension form with micrometer sized flakes with a less controlled thickness and evenness of coverage over the grid. CVD Graphene oxide films on the other hand are produced by oxidizing CVD Graphene films at relatively low temperatures in oxygen (typically 200ºC or less). These are continuous films and typically have well characterized hydrophilic properties which is important for wetting the surface of the Graphene oxide film. This property aids in the dispersion of nano particles for example but is also important for cellular biology and protein chemistry applications. ***GO films are considerably less costly than CVD Graphene.***

Graphene Oxide (GO) Support Films



Graphene oxide (GO) provides a support film up to 50% thinner than the equivalent carbon support but has a higher mechanical strength, electrical and thermal conductivity. TAAB Graphene Oxide support films are almost transparent in the electron beam and are available on holey and lacey carbon and Quantifoil® supports. These new GO films are hydrophilic and ideally suited to imaging of small nanoparticles, nanowires and suspensions. Their low atomic number and thin-layer thickness result in significantly lower background contrast than conventional supports. GO support films are also ideal for Cryo TEM studies. The vitreous ice layer can be significantly thinner on GO support films providing higher contrast and hence higher resolution for structural determination.

Graphene offers some unique advantages for studying interactions and processes at the atomic level. As the first readily available two-dimensional material, it is a model system for transmission electron microscopy studies; being almost electron transparent it enables other species to be resolved on its surface with atomic resolution. It is also a well-defined surface, allowing surface science techniques to be integrated with high resolution transmission electron microscopy and scanning probe microscopy.

G203/10 GO film on ***lacey*** *carbon* on 300 mesh square Cu grid (10) **G203/25** GO film on ***lacey*** *carbon* on 300 mesh square Cu grid (25)
G203/50 GO film on ***lacey*** *carbon* on 300 mesh square Cu grid (50)

G217/10 GO film on *holey* carbon on 300 mesh square Cu grid (10) **G217/25** GO film on *holey* carbon on 300 square Hex Cu grid (25)
G2127/50 GO film on *holey* carbon on 300 mesh square Cu grid (50)

G204/10 GO film on Quantifoil R 2/4 on 300 mesh Cu (10) **G204/25** GO film on Quantifoil R 2/4 on 300 mesh Cu (25)
G204/50 GO film on Quantifoil R 2/4 on 300 mesh Cu (50)

G219/10 GO film on Quantifoil R 2/4 on 200 mesh Cu (10) **G219/25** GO film on Quantifoil R 2/4 on 200 mesh Cu (25)
G219/50 GO film on Quantifoil R 2/4 on 200 mesh Cu (50)

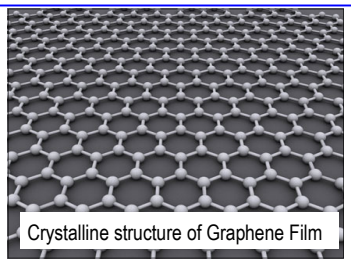
G220/10 GO film on Quantifoil R 1.2/1.3 on 400 mesh Cu (10) **G220/25** GO film on Quantifoil R 1.2/1.3 on 400 mesh Cu (25)
G220/50 GO film on Quantifoil R 1.2/1.3 on 400 mesh Cu (50)

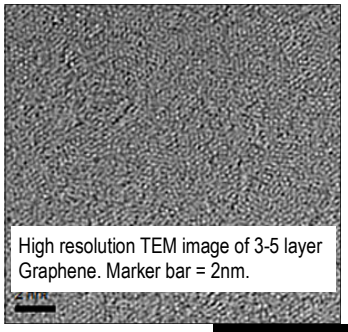
Available on other supports to special order

Graphene TEM Support Films

Our Graphene TEM support films are supported by a lacey carbon film on a 300 mesh copper grid. The single, continuous Graphene sheet covers the entire 300 mesh area of the TEM grid. This creates a usable area of around 75% of the TEM grid, leaving plenty of space for specimens or experiments. The Graphene films are available with either 1, 2, 3-5 or 6-8 layers of Graphene. The 2 layer Graphene is ideally suited for high resolution TEM imaging, imaging of nanoparticles and imaging of weak contrast materials. Graphene exhibits excellent conductivity and very high transparency for electrons. The more robust 3-5 and 6-8 layer Graphene are offered for use as an experimental platform for Graphene research. It can be used for nano scale experiments or Graphene applications research with subsequent high resolution imaging.

The Graphene used for these Graphene TEM support films is grown on copper foil using a CVD process. The Graphene is then released by dissolving the copper foil and transferred onto the lacey carbon/300mesh grid by using a proprietary transfer technique.


Crystalline structure of Graphene Film


High resolution TEM image of 3-5 layer Graphene. Marker bar = 2nm.

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