

## QUANTIFOIL<sup>®</sup> SUBSTRATES

Product No. 656, 657, 658 Series

### Description

QUANTIFOIL<sup>®</sup> Holey Carbon film is a perforated support foil with a pre-defined hole size, shape and arrangement. It is offered with circular and square, orthogonally arranged holes. The film is mounted on a conventional Cu, Au, or Ni TEM grid with 200 or 300 mesh. It has advantages in electron microscopy (EM) or low-energy electron point source (LEEPS) microscopy when compared with conventional holey film. In the final stage of the production process of QUANTIFOIL<sup>®</sup> holey film, carbon is evaporated onto a plastic holey film, and the plastic is dissolved. The grids are washed with chloroform, ethylacetate and acetone. However, not all plastic can be removed. Therefore, the final thickness of the foil is about 20 nm, although only 10 nm of carbon is evaporated onto the plastic.

**Please note:** The carbon of the QUANTIFOIL<sup>®</sup> is mounted on the shiny side of the grid. QUANTIFOIL<sup>®</sup> grids are packaged with their coated sides toward the center of the gridbox.

### Applications of QUANTIFOIL<sup>®</sup> Holey Carbon Films:

In electron microscopy, support foil with a high percentage of open area is used in order to minimize the total specimen thickness or to eliminate the object distortions arising from interactions with a support.

Thus, perforated foil is used to bear an ultra-thin carbon support foil or to directly support a large object, such as a powder particle, in the case of electron diffraction and energy loss spectroscopy, and electron spectroscopic and dark field imaging.

- Preparation of vitrified specimens: QUANTIFOIL<sup>®</sup> is also used when small objects, such as biomacromolecular complexes, are studied in a free hanging layer of sustaining medium. This medium is vitreous ice in cryo-EM.
- Low-dose Electron Microscopy: QUANTIFOIL<sup>®</sup> greatly simplifies the carrying out of low-dose procedures. The location of the area(s) used for focusing, relative to the area that is recorded, need(s) to be set only once for a specimen.
- Automated image acquisition: QUANTIFOIL<sup>®</sup> allows image acquisition to be performed automatically.
- Cryo-electron tomographic reconstruction.
- Low-energy electron point source – LEEPS – microscopy: In low-energy electron point source microscopy a perforated foil 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 film.
- With the known size of the pore of the QUANTIFOIL<sup>®</sup>, one can estimate the size of a particle observed directly.

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*Tools for Science and Industry*

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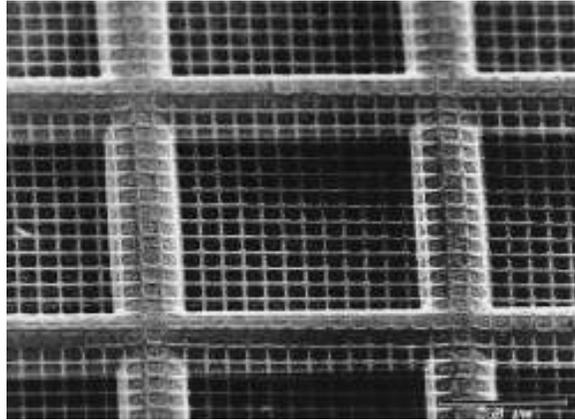
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Products:

**QUANTIFOIL<sup>®</sup> With Square Holes**

QUANTIFOIL<sup>®</sup> with relatively large holes and narrow bars can be used to support a thin carbon film, which by itself is too fragile to span a grid square. Alternatively, such a holey film can directly support an object that is larger than the holes.

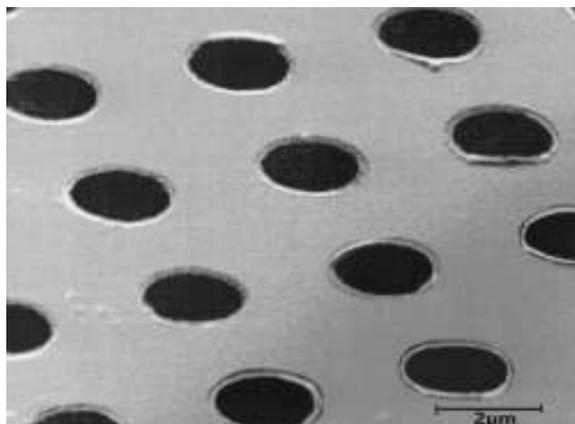


**Square Mesh 7 x 7 $\mu$ m and a Bar Width of about 2 $\mu$ m**

<b>Prod #</b>	<b>Description</b>	<b>Unit</b>
<b>656-200-Cu</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 200M Cu grid	pkg/10
<b>656</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 200M Cu grid	each
<b>656-200-Au</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 200M Au grid	pkg/10
<b>656-200-Ni</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 200M Ni grid	pkg/10
<b>656-300-Cu</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 300M Cu grid	pkg/10
<b>656-300-Au</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 300M Au grid	pkg/10
<b>656-300-Ni</b>	Quantifoil Substrate, 7 $\mu$ m square holes and 2 $\mu$ m bars, mounted on a 300M Ni grid	pkg/10

## QUANTIFOIL<sup>®</sup> With Circular Holes

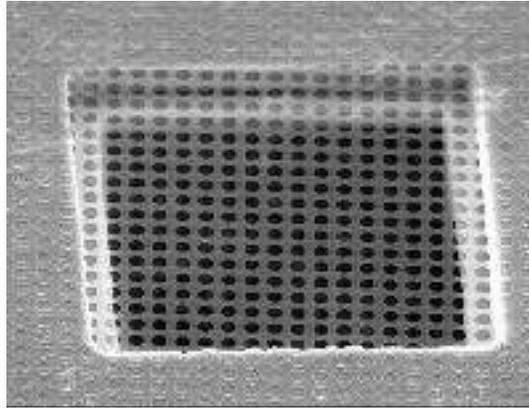
QUANTIFOIL<sup>®</sup> with circular holes is mainly used in cryo-EM. The roundness of the holes is advantageous with respect to the formation of an ice layer of constant thickness. The hole size that is chosen depends on the magnification used, and on whether or not one wishes to include support film 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 of unsupported ice.



### Orthogonal Array of 2µm Diameter Holes with about 2µm Separation

This type is used magnifications between 30,000x and 40,000x.

Prod #	Description	Unit
657-200-Cu	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 200M Cu grid	pkg/10
657	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 200M Cu grid	each
657-200-Au	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 200M Au grid	pkg/10
657-200-Ni	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 200M Ni grid	pkg/10
657-300-Cu	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 300M Cu grid	pkg/10
657-300-Au	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 300M Au grid	pkg/10
657-300-Ni	Orthogonal Array of 2µm Diameter Holes - 2µm Separation, mounted on a 300M Ni grid	pkg/10



**Orthogonal Array of 1.2µm Diameter Holes with about 1.3µm Separation**

This type is used at magnifications around 50,000x.

<b>Prod #</b>	<b>Description</b>	<b>Unit</b>
<b>658-200-Cu</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 200M Cu grid	pkg/10
<b>658-200-Au</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 200M Au grid	pkg/10
<b>658-200-Ni</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 200M Ni grid	pkg/10
<b>658-300-Cu</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 300M Cu grid	pkg/10
<b>658-300-Au</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 300M Au grid	pkg/10
<b>658-300-Ni</b>	Orthogonal Array of 1.2µm Diameter Holes - 1.3µm Separation, mounted on a 300M Ni grid	pkg/10