Woven Mesh

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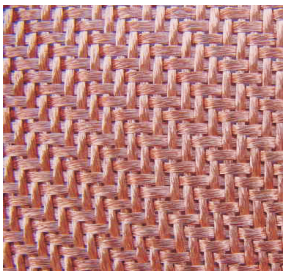
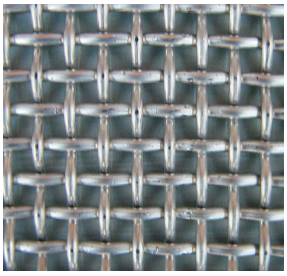
Release 1

Woven Wire Mesh

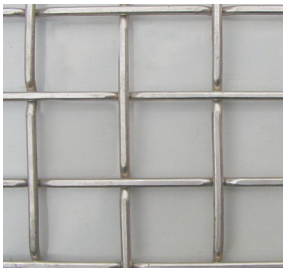
Woven wire meshes are commonly used for all kind of industrial and decorative applications. Woven wire mesh is deliverable from stock (standard range) or can be woven on customers requist. Wire meshes are available in many different varieties, with regard to application and specification. Many design features can be varied, for example: material, wire style & diameter, weaving pattern, finishing, etc.



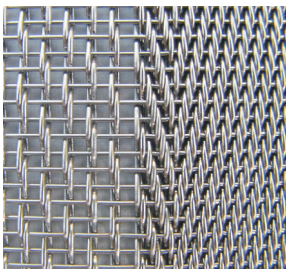
Multifilament warp and weft wires (copper brass)



Heavy woven mesh (relatively thick wires)



Flat top crimped mesh (pre-crimped)



Special mesh (combined weavings in one mesh)

Metals are for example: aluminum, (tinned) copper, (galvanised or plain) steel, stainless steel grades, Common applied types of stainless steel are for example: 304, 304 L, 316, 316 L and 321.

Woven Mesh Parameters

Square woven wire cloth is definied by the size of the aperture or mesh opening (w) and the wire diameter (d). Mesh count is the number of meshes per linear inch.

The absolute rating is measured by the Bubble Test Method which uses alcohol as test liquid. The absolute size of an aperture or mesh opening determines the biggest ball shaped particle which can pass through the wire cloth.The correlation of this test method with the actual aperture size of a filter cloth has been proven by MPA (Dortmund, Germany 1978).
There is no uniform method known to determine the Nominal Filter Rating of a woven wire mesh. Therefore the data often stated should be used with care. The method most commonly used is the so called Multi-Pass-Test. A test fluid, contaminated with particles of various sizes, is passed through the applied filter media under steady flow conditions.
The term Nominal Filter Rating describes the particle size of which a predetermined percentage was retained by the media. The Multi Pass Test is the only method to measure the openings of random fibre or other diffusion bonded filter media which do not have equal and controled apertures such as woven wire cloth.

Herebelow you will find a more detailed explanation on woven wire mesh:

Mesh opening w is the clearance between two adjacent warp or weft wires measured in the projected plane.

Wire diameter d is the diameter of the woven wire measured before weaving.

Spacing or pitch p is the clearance of the middle line of two adjacent wires or the sum of mesh width w and wire diameter d.

Warp: total number of wires running parallel to the selvedges.

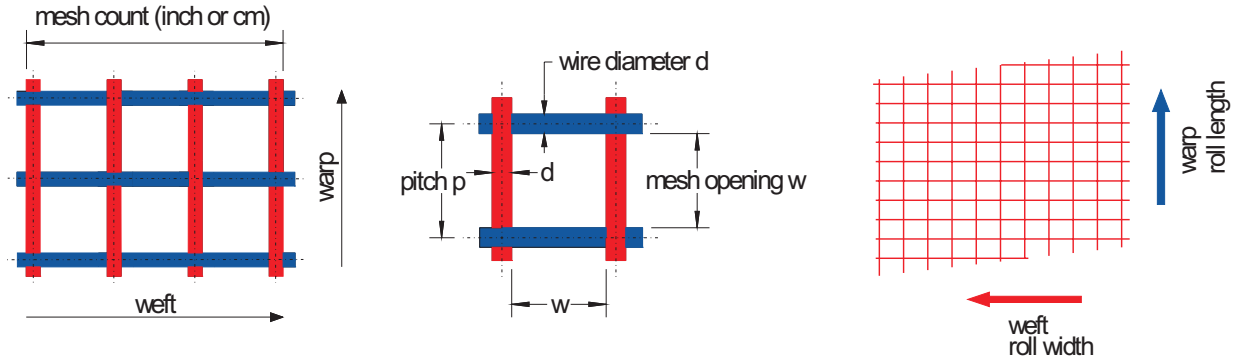
Weft: total number of wires running at right angles to the warp wires.

Mesh number per length unit n (mesh count) is the number of meshes counted consecutively in a row in a unit of length. The unit of length can be mm, decimetres or inches, or any other unit. The number of meshes in a length of 25.4 mm is referred to as the mesh.

Mesh = Number of meshes per inch = $25.4 / p = 25.4 / (w + d)$

N/cm = Number of meshes per cm = $10 / p = 10 / (w + d)$

N/cm² = Number of meshes per cm² = $(10 / p)^2 = (10 / (w + d))^2$



The *mesh opening w* can also be calculated as follows:.

W = (25.4 no. of meshes per inch / mesh count) - d

Open screen area A0 is the proportion of screen openings in the total woven area as a percentage.

$A0 = 100 \quad (w \quad / \quad (w+d))^2$

The A0 results from the ratio of the squares of mesh width w and spacing t, rounded to a full percentage value.

Woven weight W in kg per m²:

$W = (12.7 \times d^2) / p$

This is valid only for carbon steel as per DIN 4189. Conversion factors for materials other than steel (index 100) are as follows: stainless steel 101, copper 114, monel™ metal 112.5, brass 110, phosphor bronze 112.5, nickel 112.5.

Weaving pattern or texture is the way in which the warp and weft wires are linked.

Weaving Patterns

Many weaving patterns are possible, for example:

Plain weave is the most commonly used type of weaving. Each warp wire crosses alternately above and below each weft wire. Warp and weft wires generally have the same diameter.

Twill Weave allows a thicker wire and is suitable for heavy meshes. The wire position of twill weave wire mesh is less stable compared with plain weave.

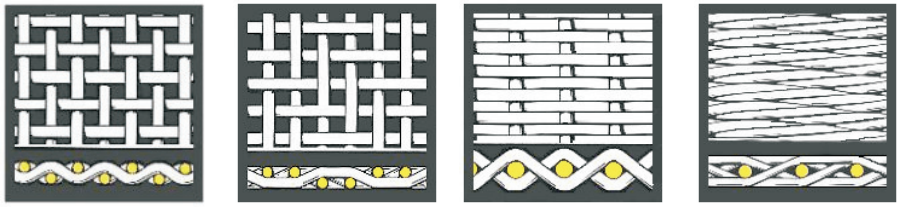
Dutch Plain Weave is similar to plain weave, while the warp wires are thicker and packed more cloesely together. This type of woven wire mesh is mainly used as industrial filter cloth and apparatus of separation.

Dutch Twill Weave is a combination of dutch weave and twill weave. It is similar to twill weave, but the warp wires are thicker and packed more closely together. This type enables a strong wire cloth with super fine filtration. Ideal for fine filtration.

Five Heddle Weave has a smooth top surface and an open lower surface. It is ideal to withstand high mechanical strain and excellent filter performance.

Reverse Dutch Weave is the same as Dutch weave except the warp and weft wires are reversed. The weft wires are thicker than the warp wires.

The opening of the two nearby orientated wires (warp or weft wires) at Dutch Weave is difficult to define.



Plain weave | Twill weave | Dutch Plain weave | Dutch Twill weave

Crimped Woven Mesh

Crimped woven wire mesh is a special type of woven wire mesh. Common applied types are for example: flat top crimped, double crimped and corrugated cimped.

Flat top crimped woven wire mesh provides a flat surface which keeps plugging to a minium.

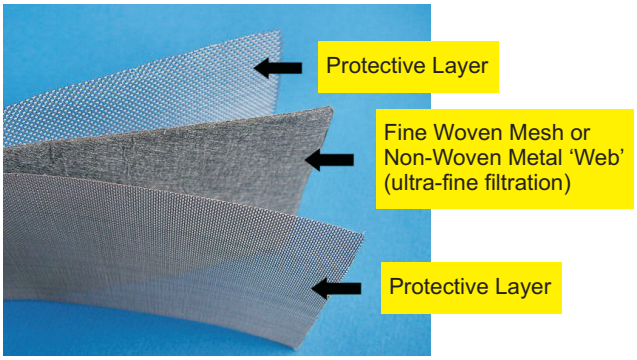
Double crimped woven wire mesh result in a very heavy and rigid construction.
Finaly, *corrugated crimped* woven wire mesh is provided with extra crimps in warp and weft directions. This will result in a rigid mesh, even when the mesh opening or aperture is large in relation to the diameter of the wire.

Crimped woven wire meshes are often used as support for other filtration media, for example in vibrating screens, (high pressure) filters, grids and trays, etc.
More information on woven wire mesh can be found in our Woven Wire Mesh Tables (as per DIN 4189) or visit our website www.wiremeshprovider.com.

Sintered Woven Mesh

Sintered woven wire mesh consist of multi-layers of woven wire mesh laminated together by use of 'sintering'. This creates an enormous class of new materials with a very wide variety of mechanical properties. By combining multiple layers of different mesh weavings, it is possible to design materials with specific target thickness, permeability, pore size, and mechanical strength.

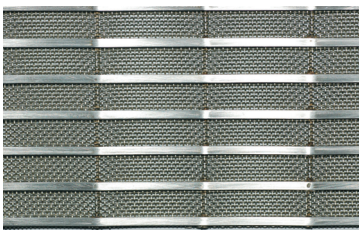
More information can be found in our 'Sintered Mesh' leaflet or visit www.wiremeshprovider.com.



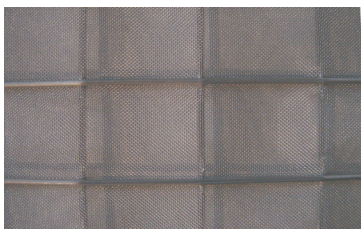
A composition of sintered mesh layers (before sintering)

Composite Meshes

Composite meshes are a combination of (more) woven mesh(es) and/or welded mesh. The fixation can be achieved mechanically or by use of welding - but not by use of sintering. For example: a fine mesh which does not withstand a pressure drop can be easily reinforced by a thougher mesh. Some examples can be found below.



Composite mesh - welded mesh based on flat wires - welded to woven mesh



Composite mesh (welded mesh mechanically mounted to woven mesh)

Contact

We have pleasure in advising you by the application of woven meshes.

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