

## Reference: Mesh Micron Conversion Chart

The chart below details the equivalents to convert from mesh to micron or vice versa. These measurements indicate the mesh or pore openings in your filter bag material

Micron	U.S. Mesh	Inches
2000	10	0.0787
1680	12	0.0661
1410	14	0.0555
1190	16	0.0469
1000	18	0.0394
841	20	0.0331
707	25	0.028
595	30	0.0232
500	35	0.0197
420	40	0.0165
354	45	0.0138
297	50	0.0117
250	60	0.0098
210	70	0.0083
177	80	0.007
149	100	0.0059
125	120	0.0049
105	140	0.0041
88	170	0.0035
74	200	0.0029
63	230	0.0024
53	270	0.0021
44	325	0.0017
37	400	0.0015

## Reference: Principles of Liquid Filtration

### Liquid Filtration

Liquid filtration involves the removal of contaminant particles in a fluid system. The grade of filter chosen for a specific application is usually determined by the size of the particle to be removed. Contaminant particles are measured using the "micron" unit of measurement.

### Micron

A micron is a metric unit of measurement where one micron is equivalent to one one-thousandth of a millimetre [1 micron (1 $\mu$ ) = 1/1000 mm] or 1 micron (micrometer) = 1/1,000,000 of a metre.

### Visualizing a micron

- a human red blood cell is 5 microns
- an average human hair has a diameter of 100 microns
- most humans cannot see anything smaller than 40 microns with the unaided eye.

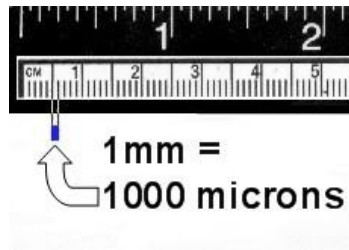
The following chart relates to size of some common particles:

Lower Limit	Upper Limit	Contaminant
Micron	Micron	
0.3	0.4	Smoke, Paint Pigments
0.4	0.55	Bacteria
0.55	0.7	Lung Damaging Paint
0.7	1.0	Atmospheric Dust
1.0	1.3	Molds
1.6	2.2	Flour Mill Dust
3	4	Cement Dust
4	5.5	Pulverized Coal
5.5	7	Commercial Dust
7	10	Pollen
10	75	Silt
75	1000	Sand

The micron unit of measurement is used not only to measure the size of a contaminate particle, it is also used to measure the size of the openings in filter media, hence, a media's micron rating. This system of measurement is more accurate when gauging woven filtration structures, such as monofilaments, than it is for gauging non-woven structures, such as felts.

## What is a Micron?

**A micron is a unit of measure** in the metric system. It equals one-millionth of a meter and one-thousandth of a millimeter. It is a shorten word for micrometer.



m	meter	39.37 inch
dm	decimeter	3.937 inch
cm	centimeter	.3937 inch
mm	millimeter	.03937 inch
um	micrometer	.00003937 inch

Micrometers measure things that are very small. It is ideal for measuring things that are so small that the naked eye can barely see it. And it is ideal for measuring things so small that that the naked eye cannot see it. For example, airborne allergens such as pollen and mold spores usually fall just below the level of what the eye can see.

The word comes from the Greek word "Mikros" which means small.

The table below shows the placement of this unit of measure in the metric system.

You can see how small of a unit of measure that it is. If you were using a high power microscope or a SEM microscope and wanted to measure what you were looking at, the next unit of measure that is smaller is a nanometer. One thousand nanometers equals one micron.

The Unit-Length-Conversion website is a great website to [convert to and from microns](#) to other units of measure.

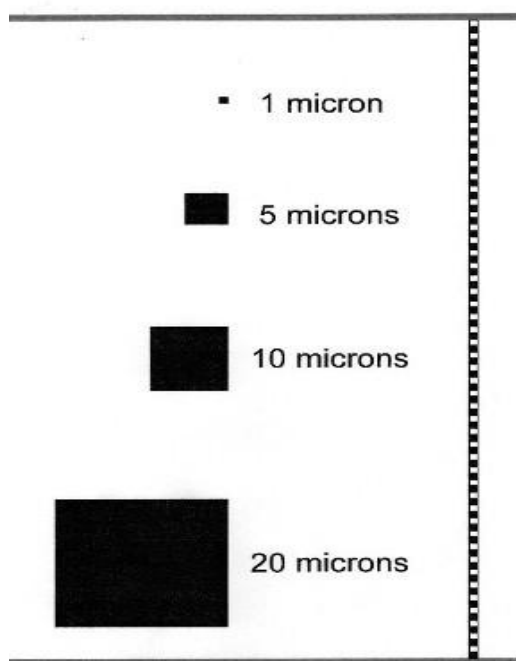
## How to Visualize such a Small Unit of Measure

I will try to describe a visual picture to put such a small size into perspective. To know that 25,400 microns equals one inch is one thing. To understand and to be able to visualize what that means is another.

To begin, I want to establish a point of reference that we can all relate to. Copy paper for the computer printer can vary in thickness. For this example, we will say that the average thickness of common copy paper is 100 *microns*. I arrive at this figure by measuring a ream of 500 sheets of paper. I take that measurement and divide by 500 and come up with a figure that is very close to .12 mm.

Pick up a piece of paper and look at the edge (the thickness) and you will see that the period at the end of this sentence is bigger.

The picture below represents **the thickness** of copy paper.



The horizontal line at top of the picture represents the top of the paper which is the writing side. The bottom line in the picture represents the bottom of the paper which would be the side that is touching the desk as you write.

Look at the edge thickness of a piece of paper and then look at the diagram above. This should help this small size into perspective.

If a piece of paper was lying flat on your desk, the right side of the picture above shows what a hundred microns would look like stacking upon top of each other along the edge (the thickness) of the paper.

This unit of measure makes it the ideal unit of measure for airborne allergens. As shown in the article [Particle Sizes of Airborne Allergens](#), most allergic airborne triggers range between 1-100 microns in size. And when talking about [nasal allergies](#), the smaller the particle size, the more potential it has to stay airborne longer before settling. This results in more of a chance for the allergens to be breathed in.

## MESH TO MICRON CONVERSION CHART

<b>U.S. MESH</b>	<b>INCHES</b>	<b>MICRONS</b>	<b>MILLIMETERS</b>
3	0.2650	6730	6.730
4	0.1870	4760	4.760
5	0.1570	4000	4.000
6	0.1320	3360	3.360
7	0.1110	2830	2.830
8	0.0937	2380	2.380
10	0.0787	2000	2.000
12	0.0661	1680	1.680
14	0.0555	1410	1.410
16	0.0469	1190	1.190
18	0.0394	1000	1.000
20	0.0331	841	0.841
25	0.0280	707	0.707
30	0.0232	595	0.595
35	0.0197	500	0.500
40	0.0165	400	0.400
45	0.0138	354	0.354
50	0.0117	297	0.297
60	0.0098	250	0.250
70	0.0083	210	0.210
80	0.0070	177	0.177
100	0.0059	149	0.149
120	0.0049	125	0.125
140	0.0041	105	0.105
170	0.0035	88	0.088
200	0.0029	74	0.074
230	0.0024	63	0.063
270	0.0021	53	0.053
325	0.0017	44	0.044
400	0.0015	37	0.037

## Mesh Sizes and Microns

**What does mesh size mean?** Figuring out mesh sizes is simple. All you do is count the number of openings in one inch of screen (in the United States, anyway.) The number of openings is the mesh size. So a 4-mesh screen means there are four little squares across one linear inch of screen. A 100-mesh screen has 100 openings, and so on. As the number describing the mesh size increases, the size of the particles decreases. Higher numbers equal finer material. Mesh size is not a precise measurement of particle size.

**What do the minus (-) and plus (+) plus signs mean when describing mesh sizes?** Here's a simple example of how they work. -200-mesh would mean that all particles smaller than 200-mesh would pass through. +200 mesh means that all the particles 200-mesh or larger are retained.

**How fine do screens get?** That depends on the wire thickness. If you think about it, the finer the weave, the closer the wires get together, eventually leaving no space between them at all. For this reason, beyond 325-mesh particle size is usually described in "microns."

**What is a micron?** A micron is another measurement of particle size. A micron is one-millionth of a meter or one twenty-five thousandth of an inch.

Sieve Mesh #	Inches	Microns	Typical Material
14	.0555	1400	-
28	.028	700	Beach Sand
60	.0098	250	Fine Sand
100	.0059	150	-
200	.0029	74	Portland Cement
325	.0017	44	Silt
400	.0015	37	Plant Pollen
(1200)	.0005	12	Red Blood Cell
(2400)	.0002	6	-
(4800)	.0001	2	Cigarette Smoke

The mesh numbers in parentheses are too small to exist as actual screen sizes; they are estimates included for reference.

