

Mesh to Micron Aperture Conversion Chart

3–140 mesh, with ASTM E11 cross-reference and conflict notes

A mesh number is a weaving density, not an aperture. Two screens sold as “100 mesh” can differ by more than 50 µm and both be described honestly. Every size in this chart is stated as a **nominal aperture** in millimetres or micrometres; the mesh number is carried only as a shop-floor label.

Columns 4 and 5 cross-reference the ASTM E11 woven-wire test sieve series. Of the 21 grades below, **12 cannot be matched to ASTM E11 by number at all** — 9 carry the same number as an E11 sieve but a different aperture, and 3 have no E11 equivalent. Wherever the two disagree, trust the aperture.

Mesh (nominal)	Aperture mm	Aperture µm	ASTM E11 sieve no.	ASTM E11 aperture µm	Cross-check
3	8.000	8000	—	—	not in E11
4	4.750	4750	No.4	4750	identical
6	3.500	3500	No.6	3350	+150 µm
8	2.500	2500	No.8	2360	+140 µm
10	2.000	2000	No.10	2000	identical
12	1.700	1700	No.12	1700	identical
14	1.430	1430	No.14	1400	+30 µm
16	1.180	1180	No.16	1180	identical
18	1.000	1000	No.18	1000	identical
20	0.900	900	No.20	850	+50 µm
24	0.800	800	—	—	not in E11
30	0.600	600	No.30	600	identical
40	0.450	450	No.40	425	+25 µm
50	0.355	355	No.50	300	+55 µm
60	0.300	300	No.60	250	+50 µm
70	0.250	250	No.70	212	+38 µm
80	0.200	200	No.80	180	+20 µm
100	0.150	150	No.100	150	identical
120	0.125	125	No.120	125	identical
132	0.115	115	—	—	not in E11
140	0.106	106	No.140	106	identical

Reading the cross-check column. identical — the mesh grade and the ASTM E11 sieve of the same number specify the same aperture. +n µm — the number matches an ASTM E11 sieve, but this grade is n µm coarser. not in E11 — no ASTM E11 sieve carries this number. Totals: **9 identical · 9 same number, different aperture · 3 no E11 equivalent.**

Conflict notes

No. 50 is the expensive one. ASTM E11 No. 50 is 300 µm. The 50-mesh grade in the chart above is 355 µm — which ASTM calls No. 45. A laboratory that orders “50” and receives a 355 µm screen has ordered correctly by one system and received a coarser screen by the other. This single pair accounts for most disputes in aggregate and cement testing.

The offsets run one way. Every conflicting grade above is coarser than the ASTM E11 sieve of the same number — from +20 µm at 80 mesh up to +150 µm at 6 mesh. The 6, 8, 20, 40, 50, 60, 70 and 80 mesh grades all sit on the coarse side of their ASTM namesakes. Where the two systems agree — No. 4, 10, 12, 16, 18, 30, 100, 120 and 140 mesh — they agree exactly.

24 mesh and 132 mesh are not ASTM E11 designations. Neither number appears in the standard series. If a specification calls for them by number, ask for the aperture instead: 800 µm and 115 µm respectively.

3 mesh is a label, not a number. An 8.00 mm aperture does exist in ASTM E11 (as 5/16 in), but E11 stops numbering sieves at No. 4 and switches to millimetres or inches above it.

ISO 3310-1 is a third series again. If a drawing names ISO rather than ASTM, the R20/3 aperture values differ from both columns above. Match on the aperture value in µm in every case.

ASTM E11 woven-wire test sieve series

The full standard series from No. 4 to No. 635. In ASTM E11 the aperture is the specification and the sieve number is the alternative label — not the reverse. Coarser than No. 4, the series is designated in millimetres or inches only, because there is no practical mesh number for it.

No.	µm	mm
No.4	4750	4.750
No.5	4000	4.000
No.6	3350	3.350
No.7	2800	2.800
No.8	2360	2.360
No.10	2000	2.000
No.12	1700	1.700
No.14	1400	1.400
No.16	1180	1.180
No.18	1000	1.000
No.20	850	0.850
No.25	710	0.710
No.30	600	0.600
No.35	500	0.500
No.40	425	0.425
No.45	355	0.355

No.	µm	mm
No.50	300	0.300
No.60	250	0.250
No.70	212	0.212
No.80	180	0.180
No.100	150	0.150
No.120	125	0.125
No.140	106	0.106
No.170	90	0.090
No.200	75	0.075
No.230	63	0.063
No.270	53	0.053
No.325	45	0.045
No.400	38	0.038
No.500	25	0.025
No.635	20	0.020

Coarse and aggregate sizes (ASTM C136)

Sieve	Aperture	Also written
1 in	25.000 mm	25000 µm
3/4 in	19.000 mm	19000 µm
1/2 in	12.500 mm	12500 µm
3/8 in	9.500 mm	9500 µm
No. 4	4.750 mm	4750 µm
No. 8	2.360 mm	2360 µm
No. 16	1.180 mm	1180 µm
No. 30	600 µm	0.600 mm
No. 50	300 µm	0.300 mm
No. 100	150 µm	0.150 mm
No. 200	75 µm	0.075 mm

How to specify a sieve so it cannot be misread

1. Give the aperture. “150 µm” is unambiguous; “100 mesh” is not.
2. Name the standard. ASTM E11, ISO 3310-1 and BS 410 are different aperture series and are not interchangeable by number.
3. Give the frame. Diameter and height, in millimetres or inches.
4. Give the material. Woven wire grade and frame material — 304 or 316 stainless, or brass.
5. Ask for the certificate. A nominal aperture is a target; the tolerance is what your result depends on.