

Particle Size - US Sieve Series and Tyler Mesh Size Equivalents

Background

Sieving or screening is a method of separating a mixture or grains or particles into 2 or more size fractions, the over sized materials are trapped above the screen, while undersized materials can pass through the screen.

Sieves can be used in stacks, to divide samples up into various size fractions and hence determine particle size distributions.

Sieves and screen are usually used for larger particle sized materials i.e., greater than approximately 50µm (0.050mm).

Size Equivalents

Two scales that are used to classify particle sizes are the US Sieve Series and Tyler Equivalent, sometimes called Tyler Mesh Size or Tyler Standard Sieve Series. The most common mesh opening sizes for these scales are given in the table below and provide an indication of particle sizes.

| US Sieve Size | Tyler Equivalent | Opening | |
|---------------|------------------|---------|--------|
| | | mm | in |
| - | 2½ Mesh | 8.00 | 0.312 |
| - | 3 Mesh | 6.73 | 0.265 |
| No. 3½ | 3½ Mesh | 5.66 | 0.233 |
| No. 4 | 4 Mesh | 4.76 | 0.187 |
| No. 5 | 5 Mesh | 4.00 | 0.157 |
| No. 6 | 6 Mesh | 3.36 | 0.132 |
| No. 7 | 7 Mesh | 2.83 | 0.111 |
| No. 8 | 8 Mesh | 2.38 | 0.0937 |
| No. 10 | 9 Mesh | 2.00 | 0.0787 |
| No. 12 | 10 Mesh | 1.68 | 0.0661 |
| No. 14 | 12 Mesh | 1.41 | 0.0555 |
| No. 16 | 14 Mesh | 1.19 | 0.0469 |
| No. 18 | 16 Mesh | 1.00 | 0.0394 |
| No. 20 | 20 Mesh | 0.841 | 0.0331 |

| | | | |
|---------|----------|-------|--------|
| No. 25 | 24 Mesh | 0.707 | 0.0278 |
| No. 30 | 28 Mesh | 0.595 | 0.0234 |
| No. 35 | 32 Mesh | 0.500 | 0.0197 |
| No. 40 | 35 Mesh | 0.420 | 0.0165 |
| No. 45 | 42 Mesh | 0.354 | 0.0139 |
| No. 50 | 48 Mesh | 0.297 | 0.0117 |
| No. 60 | 60 Mesh | 0.250 | 0.0098 |
| No. 70 | 65 Mesh | 0.210 | 0.0083 |
| No. 80 | 80 Mesh | 0.177 | 0.0070 |
| No.100 | 100 Mesh | 0.149 | 0.0059 |
| No. 120 | 115 Mesh | 0.125 | 0.0049 |
| No. 140 | 150 Mesh | 0.105 | 0.0041 |
| No. 170 | 170 Mesh | 0.088 | 0.0035 |
| No. 200 | 200 Mesh | 0.074 | 0.0029 |
| No. 230 | 250 Mesh | 0.063 | 0.0025 |
| No. 270 | 270 Mesh | 0.053 | 0.0021 |
| No. 325 | 325 Mesh | 0.044 | 0.0017 |
| No. 400 | 400 Mesh | 0.037 | 0.0015 |

The mesh number system is a measure of how many openings there are per linear inch in a screen. Sizes vary by a factor of $\sqrt{2}$. This can easily be determined as screens are made from wires of standard diameters, however, opening sizes can vary slightly due to wear and distortion.

US sieve sizes differ from Tyler Screen sizes in that they are arbitrary numbers.

Primary author: AZoM.com

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