



Coating Thicknesses (Conversions & Measurements)

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Standard Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Testing Methods

Significance and Use

General - No presently available thickness gauge is applicable to all combinations of coating-substrate thicknesses and materials. The limitations of a particular instrument are generally delineated by its manufacturer.

Magnetic - Magnetic-type gauges measure either magnetic attraction between a magnet and a coating or its substrate, or reluctance of a magnetic flux path passing through the coating and substrate. These gauges are designed to measure thickness of a nonmagnetic coating on a magnetic substrate. Some of them will also measure thickness of nickel coatings on a magnetic or nonmagnetic substrate.

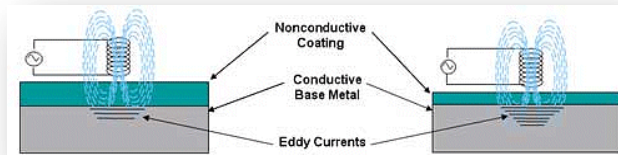
Eddy Current - Eddy-current-type thickness gauges are electronic instruments that measure variations in impedance of an eddy-current inducing coil caused by coating thickness variations. They can only be used if the electrical conductivity of the coating differs significantly from that of the substrate.

Accuracy - The accuracy of a measurement depends on the instrument, its calibration and standardization, and its operating conditions. The accuracy is also affected by the interferences listed in Section 5, such as part geometry (curvature), magnetic permeability, and surface roughness.

Note 2 - This practice allows the coating thickness to be determined within $\pm 10\%$ of its true thickness or to within $\pm 2.5 \mu\text{m}$ (or $\pm 0.0001\text{-in.}$), whichever is the greater. (See exceptions in Appendix X2.)

Source - ASTM E376-11, ASTM International

<http://www.astm.org/cgi-bin/resolver.cgi?E376>



Mils to Microns Conversion Chart (Coating Thickness)

	Mils	Microns		Mils	Microns
1	25.4	40.8	26	1295.4	1320.8
2	76.2	101.6	27	1346.2	1371.6
3	127.0	152.4	28	1397.0	1422.4
4	177.8	203.2	29	1447.8	1473.2
5	228.6	254.0	30	1498.6	1524.0
6	279.4	304.8	31	1549.4	1574.8
7	330.2	355.6	32	1600.2	1625.6
8	381.0	406.4	33	1651.0	1676.4
9	431.8	457.2	34	1701.8	1727.2
10	482.6	508.0	35	1752.6	1778.0
11	533.4	558.8	36	1803.4	1828.8
12	584.2	609.6	37	1854.2	1879.6
13	635.0	660.4	38	1905.0	1930.4
14	658.8	711.2	39	1955.8	1981.2
15	736.6	762.0	40	2006.6	2032.0
16	787.4	812.8	41	2057.4	2082.8
17	838.2	863.6	42	2108.2	2133.6
18	889.0	914.4	43	2159.0	2184.4
19	939.8	965.2	44	2209.8	2235.2
20	990.6	1016.0	45	2260.6	2266.0
21	1041.4	1066.8	46	2311.4	2336.8
22	1092.2	1117.6	47	2362.2	2387.6
23	1143.0	1168.4	48	2413.0	2438.4
24	1193.8	1219.2	49	2463.8	2489.2
25	1244.6	1270.0	50	2514.6	2540.0

Source - Chart provided by Teknocom Inc.

Common Conversion Factors (Mils to Microns - and vice versa)

Unit Descriptions

- | | | |
|---------------|----------|---|
| Mils | - Thou | - 1/1000 of an inch |
| | | - 1 mil is exactly 1×10^{-3} inches. In SI units, 1 mil is 2.54×10^{-5} meters. |
| μM | - Micron | - micrometre |
| | | - 1 micron is exactly 1×10^{-6} meters. Meters are SI units. |

How to Convert Microns to Mils

To convert microns to mils:
Divide the micron by 25.4 to arrive at true mil thickness.

For Example

7 Microns \div 25.4 = .28 Mil
34 Microns \div 25.4 = 1.34 Mil

How to Convert Mils to Microns

To convert mil to microns:
Multiply the mil by 25.4 to arrive at true micron thickness.
1 Mil = 25.4 Microns

For Example

.31 Mil \times 25.4 = 7.9 Microns
.74 Mil \times 25.4 = 18.8 Microns

Conversion Tables

Conversions Table (Mils to Microns)	
1 Mil to Microns = 25.4	70 Mil to Microns = 1778
2 Mil to Microns = 50.8	80 Mil to Microns = 2032
3 Mil to Microns = 76.2	90 Mil to Microns = 2286
4 Mil to Microns = 101.6	100 Mil to Microns = 2540
5 Mil to Microns = 127	200 Mil to Microns = 5080
6 Mil to Microns = 152.4	300 Mil to Microns = 7620
7 Mil to Microns = 177.8	400 Mil to Microns = 10160
8 Mil to Microns = 203.2	500 Mil to Microns = 12700
9 Mil to Microns = 228.6	600 Mil to Microns = 15240
10 Mil to Microns = 254	800 Mil to Microns = 20320
20 Mil to Microns = 508	900 Mil to Microns = 22860
30 Mil to Microns = 762	1,000 Mil to Microns = 25400
40 Mil to Microns = 1016	10,000 Mil to Microns = 254000
50 Mil to Microns = 1270	100,000 Mil to Microns = 2540000
60 Mil to Microns = 1524	1,000,000 Mil to Microns = 25400000

Conversions Table (Microns to Mils)	
1 Microns to Mil = 0.0394	70 Microns to Mil = 2.7559
2 Microns to Mil = 0.0787	80 Microns to Mil = 3.1496
3 Microns to Mil = 0.1181	90 Microns to Mil = 3.5433
4 Microns to Mil = 0.1575	100 Microns to Mil = 3.937
5 Microns to Mil = 0.1969	200 Microns to Mil = 7.874
6 Microns to Mil = 0.2362	300 Microns to Mil = 11.811
7 Microns to Mil = 0.2756	400 Microns to Mil = 15.748
8 Microns to Mil = 0.315	500 Microns to Mil = 19.685
9 Microns to Mil = 0.3543	600 Microns to Mil = 23.622
10 Microns to Mil = 0.3937	800 Microns to Mil = 31.4961
20 Microns to Mil = 0.7874	900 Microns to Mil = 35.4331
30 Microns to Mil = 1.1811	1,000 Microns to Mil = 39.3701
40 Microns to Mil = 1.5748	10,000 Microns to Mil = 393.7008
50 Microns to Mil = 1.9685	100,000 Microns to Mil = 3937.0079
60 Microns to Mil = 2.3622	1,000,000 Microns to Mil = 39370.0787

Source - Kyle's Converter

<http://www.kylesconverter.com>



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