

Film Build Conversion Guide

The following table provides a quick means of converting between more commonly used units of measure for applied material thickness.

Mils	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Microns	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86	25.4
Grams/M ²	2.37	4.74	7.11	9.48	11.85	14.22	16.59	18.96	21.33	23.7
lb/ream	1.46	2.92	4.38	5.84	7.30	8.76	10.22	11.68	13.14	14.6
lb/1000 ft ²	0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	4.90
Grams/1000 ²	1.53	3.06	4.59	6.12	7.65	9.18	10.71	12.24	13.77	15.3

Typical Film Build Ranges by Press Type

Material film laydown varies by application method. The following table provides a rough guide of typical film builds (in microns) associated with various printing technologies. Formulations used for litho, offset, letter press, rotogravure, and screen are typically referred to as pastes while those associated with flexo and digital are much lower in viscosity. Since there are always exceptions to every rule, this chart is primarily meant to provide context to those looking to expand into new decoration and protection methods or communicate across the various printing methods.

Application Method	Low Side Typical (microns)	High Side Typical (microns)	Note
Lithography	1	2	
Sheetfed Offset	1	2	
Web Offset	1	2	
Letter Press	2	3.5	
Rotogravure	1	5	up to 20 microns
Flexo	3	8	
Rotary Screen	4	30	
Screen Printing	10	12	up to 30 microns
Digital Inkjet	20	50	up to 80 microns

Plastic Film and Sheet Thickness Conversion Charts

The following tables provide a list of plastic film and sheet gauges with corresponding measurement thicknesses in mils, microns, millimeters, and inches. Plastic film is considered anything thinner than 0.010 inches (0.25 mm), and plastic sheets are defined as thickness greater than 0.010 inches (0.25 mm).

Gauge	Mil	Micron	Millimeter	Inch
30	0.30	7.6	0.0076	0.00030
35	0.35	8.9	0.0089	0.00035
40	0.40	10.2	0.0102	0.00040
45	0.45	11.4	0.0114	0.00045
50	0.50	12.7	0.0127	0.00050
55	0.55	14.0	0.0140	0.00055
60	0.60	15.2	0.0152	0.00060
65	0.65	16.5	0.0165	0.00065
70	0.70	17.8	0.0178	0.00070
75	0.75	19.1	0.0191	0.00075
80	0.80	20.3	0.0203	0.00080
85	0.85	21.6	0.0216	0.00085
90	0.90	22.9	0.0229	0.00090
95	0.95	24.1	0.0241	0.00095
100	1.00	25.4	0.0254	0.00100
110	1.10	27.9	0.0279	0.00110
120	1.20	30.5	0.0305	0.00120
130	1.30	33.0	0.0330	0.00130
140	1.40	35.6	0.0356	0.00140
150	1.50	38.1	0.0381	0.00150

Plastic Film and Sheet Thickness Conversion Charts

Gauge	Mil	Micron	Millimeter	Inch
160	1.60	40.6	0.0406	0.00160
170	1.70	43.2	0.0432	0.00170
180	1.80	45.7	0.0457	0.00180
190	1.90	48.3	0.0483	0.00190
200	2.00	50.8	0.0508	0.00200
250	2.5	63.5	0.0635	0.00250
300	3.0	76.2	0.0762	0.00300
350	3.5	88.9	0.0888	0.00350
400	4.0	101.6	0.1016	0.00400
450	4.5	114.3	0.1143	0.00450
500	5.0	127.0	0.1270	0.00500
550	5.5	139.7	0.1397	0.00550
600	6.0	16.5	0.0165	0.00600
650	6.5	17.8	0.0178	0.00650
700	7.0	19.1	0.0191	0.00700
750	7.5	20.3	0.0203	0.00750
800	8.0	21.6	0.0216	0.00800
850	8.5	22.9	0.0229	0.00850
900	9.0	24.1	0.0241	0.00900
950	9.5	25.4	0.0254	0.00950
1000	10	27.9	0.0279	0.01000

Plastic Film and Sheet Thickness Conversion Charts

Nominal	Mil	Micron	Millimeter	Inch
1/32"	31.25	793.75	0.7937	0.03125
0.040"	40.0	1016	1.016	0.0400
1/16"	62.5	1587.5	1.5875	0.0625
1/32"	93.8	2382.5	2.3825	0.0938
1/8"	125.0	3175	3.175	0.1250
3/16"	187.5	4762.5	4.7625	0.1875
0.236"	236	5994.4	5.9944	0.2360
1/4"	250	6350	6.35	0.2500
3/8"	375	9525	9.525	0.3750
1/2"	500	12700	12.7	0.5000

Notes: A *mil* is a US unit of measure that equates to an imperial value of one thousandth of an inch (0.001 inch). A *mil* is an entirely different unit of measure than a metric *millimeter*. One mil is equivalent to 0.0254 millimeters, and one millimeter is equivalent to 39.37 mils. By comparison, the commonly used unit of *micron* is one millionth of a meter (0.000001 meter) or one thousandth of a millimeter (0.001 mm).

Film gauge is a nominal communication value correlated to the substrate thickness in inches as illustrated in the following tables. For example, a film gauge of 30 is 0.00030 inches thick. Not all film gauge sizes are available through suppliers. The gauges provided in the charts are simply meant for communication and conversion purposes.

A ranking in magnitude of one unit in each measurement thickness is as follows:

1 Gauge < 1 Micron < 1 Mil < 1 Millimeter < 1 Inch