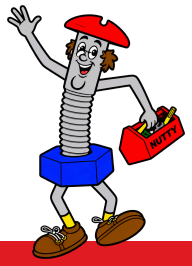
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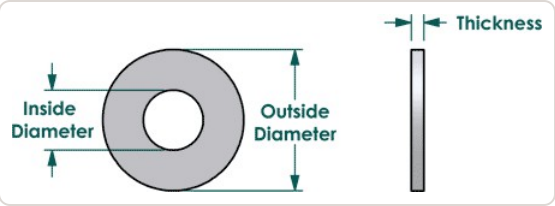
19 Seemans Lane • Milford, CT 06460 USA
203.877.1709 • 1.800.4NUTTY.1 • Fax 203.735.1097
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PRODUCT DATA SHEET

USS Flat Washers – Inch Series

1.0 Dimensions As per ASME B18.21.1 Type A Wide (inches)



- **Dimensions:** as per ASME B18.21.1, Type A Wide.
- **ID** = inside diameter
- **OD** = outside diameter
- **Finishes:** plain, zinc or hot dip galvanized (see 3.0).

Nominal Washer Size	Inside Diameter (ID)			Outside Diameter (OD)			Thickness		
	Basic	Max	Min	Basic	Max	Min	Basic	Max	Min
1/4	0.312	0.327	0.307	0.734	0.749	0.727	0.065	0.080	0.051
5/16	0.375	0.390	0.370	0.875	0.905	0.868	0.083	0.104	0.064
3/8	0.438	0.453	0.433	1.000	1.030	0.993	0.083	0.104	0.064
7/16	0.500	0.515	0.495	1.250	1.280	1.243	0.083	0.104	0.064
1/2	0.562	0.577	0.557	1.375	1.405	1.368	0.109	0.132	0.086
9/16	0.625	0.640	0.620	1.469	1.499	1.462	0.109	0.132	0.086
5/8	0.688	0.718	0.681	1.750	1.780	1.743	0.134	0.160	0.108
3/4	0.812	0.842	0.805	2.000	2.030	1.993	0.148	0.177	0.122
7/8	0.938	0.968	0.931	2.250	2.280	2.243	0.165	0.192	0.136
1	1.062	1.092	1.055	2.500	2.530	2.493	0.165	0.192	0.136
1-1/8	1.250	1.280	1.243	2.750	2.780	2.743	0.165	0.192	0.136
1-1/4	1.375	1.405	1.368	3.000	3.030	2.993	0.165	0.192	0.136
1-3/8	1.500	1.545	1.490	3.250	3.295	3.240	0.180	0.213	0.153
1-1/2	1.625	1.670	1.615	3.500	3.545	3.490	0.180	0.213	0.153
1-5/8	1.750	1.795	1.740	3.750	3.795	3.740	0.180	0.213	0.153
1-3/4	1.875	1.920	1.865	4.000	4.045	3.990	0.180	0.213	0.153
1-7/8	2.000	2.045	1.990	4.250	4.295	4.240	0.180	0.213	0.153
2	2.125	2.170	2.115	4.500	4.545	4.490	0.180	0.213	0.153
2-1/4	2.375	2.420	2.365	4.750	4.795	4.740	0.220	0.248	0.193
2-1/2	2.625	2.670	2.615	5.000	5.045	4.990	0.238	0.280	0.210
2-3/4	2.875	2.940	2.865	5.250	5.315	5.240	0.259	0.310	0.228
3	3.125	3.190	3.115	5.500	5.565	5.490	0.284	0.327	0.249

Notes:

- Type A Narrow washers are called SAE washers; Type A Wide washers are called USS washers.
- ASME B18.21.1 does not give separate SAE (Type A Narrow) and USS (Type A Wide) dimensions for sizes below 1/4" and above 1-1/2" – it gives one set of dimensions for these sizes. The Nutty Company follows the industry convention: smaller sizes #2 to #12 are designated SAE washers only, and larger sizes 1-5/8" to 3" USS washers only.

2.0 Mechanical Properties Steel – unhardened or hardened

USS steel washers are available in unhardened (non-heat treated) and hardened (heat treated) conditions.

Condition	Requirements
Unhardened (non-heat treated)	No mechanical properties are required. No marking is required (a marked washer could be mistaken for a hardened washer). Material or lot traceability is not required.
Hardened (heat treated)	Mechanical properties as per ASTM F436. Hardness 38 to 45 HRC; hot dip galvanized washers 26 to 45 HRC. Washers must be marked. The marking can be any symbol or distinguishing mark that identifies the manufacturer or private label distributor, and should be depressed on one side of the washer.

3.0 Surface Finish Plain / Zinc / HDG

Zinc, zinc yellow and hot dip galvanized details are given in the table below.

Properties	Zinc	Zinc Yellow	Hot Dip Galvanized
Type	Trivalent (Cr+3)	Hexavalent (Cr+6)	RoHS Compliant
Color	Clear	Yellow	–
Minimum Coating Thickness	0.0001" / 3 microns or 0.0002" / 5 microns	0.0001" / 3 microns or 0.0002" / 5 microns	Under 3/16" thick: 0.0017" (43 microns) 3/16" & 1/4" thick: 0.0020" (50 microns)
Specification	ASTM F1941/F1941M Fe/Zn 3AN or Fe/Zn 5AN ASTM B633 SC1 (0.0002" / 5 microns) Type III	ASTM F1941/F1941M Fe/Zn 3C or Fe/Zn 5C ASTM B633 SC1 (0.0002" / 5 microns) Type II	ASTM F2329/F2329M or ASTM A153/A153M

Disclaimer: The above is a compilation of data from various industry standards. The Nutty Company, Inc. has made every effort to present the data accurately. However, The Nutty Company, Inc. cannot be held liable for any claim traceable to any errors, typographical or otherwise, contained herein.



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