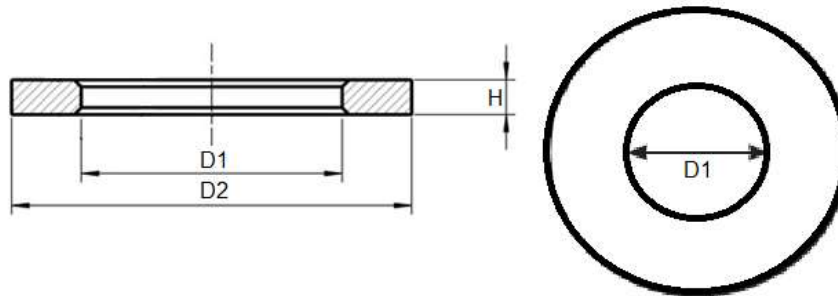


Metric DIN 433 Flat Washers

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Dimensions of Metric DIN 433 Flat Washers

For Thread	Nominal size	D1		D2		H			weight kg/1000pcs
		min.	max.	max.	min.	Nominal size	max.	min.	
M1	1.1	1.1	1.24	2.5	2.25	0.3	0.35	0.25	0.01
M1.2	1.3	1.3	1.44	3	2.75	0.3	0.35	0.25	0.012
M1.4	1.5	1.5	1.64	3	2.75	0.3	0.35	0.25	0.013
M1.6	1.7	1.7	1.84	3.5	3.2	0.3	0.35	0.25	0.017
M1.8	2	2	2.14	4	3.7	0.3	0.35	0.25	0.022
M2	2.2	2.2	2.34	4.5	4.2	0.3	0.35	0.25	0.029
M2.5	2.7	2.7	2.64	5	4.7	0.5	0.55	0.45	0.065
M3	3.2	3.2	3.38	6	5.7	0.5	0.55	0.45	0.079
M3.5	3.7	3.7	3.88	7	6.64	0.5	0.55	0.45	0.109
M4	4.3	4.3	4.48	8	7.64	0.5	0.55	0.45	0.14
M5	5.3	5.3	5.48	9	8.64	1	1.1	0.9	0.32
M6	6.4	6.4	6.62	11	10.57	1.6	1.8	1.4	0.79
M8	8.4	8.4	8.62	15	14.57	1.6	1.8	1.4	1.52
M10	10.5	10.5	10.77	18	17.57	1.6	1.8	1.4	2.11
M12	13	13	13.27	20	19.48	2	2.2	1.8	2.65
M14	15	15	15.27	24	23.48	2.5	2.7	2.3	5.41
M16	17	17	17.27	28	27.48	2.5	2.7	2.3	7.63
M18	19	19	19.33	30	29.48	2.5	2.7	2.3	8.31
M20	21	21	21.33	34	33.38	3	3.3	2.7	13.2
M24	25	25	25.33	39	39.38	4	4.3	3.7	22.1
M30	31	31	31.39	50	49.38	4	4.3	3.7	38
M36	37	37	37.62	58	56.8	5	5.6	4.4	61.5

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Metric DIN 433 Flat Washers are designed cheese head screws have a small OD slightly smaller than standard flat washers. They have a single tab that can be bent after up against the side of the nut to prevent loosening. Aspen Fasteners offers one of the most complete ranges of metric flat washers and other inch and metric industrial fasteners for immediate delivery from stock. The following sizes of metric DIN 433 Flat Washers are available for immediate shipping from stock: Diameters ranging from M1.5 to M20 in A2 and marine grade A4 stainless steel. View parts by clicking on the following link: [DIN 433 Flat Washers](#)

DIN (Deutsches Institut für Normung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 433 Flat Washers. The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization. In this case the ISO equivalent is ISO 7092.

1) Mechanical properties of stainless steel for metric DIN 433 Flat Washers

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.

Steel group	Steel grade	Strength class	Screws, Nuts and Bolts			
			Tensile strength N/mm ²	Tensile strength PSI	Dia range	Nut Load N/mm ²
Austenitic	A2 and A4	50	500	70,000	<=M39	500
		70	700	100,000	<=M20	700
		80	800	118,000	<=M20	800

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless steel screws

Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners
	70	A2, A4	Cold worked, normal strength formed fasteners
	80	A2, A4	Extreme cold worked, high strength, special applications

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2) Chemical composition of stainless steel metric DIN 433 Flat Washers

Grade	USA Grade	Material designation	Material no.	C %	Si ≤ %	Mn ≤ %	Cr %	Mo %	Ni %
A 2	304	X 5Cr Ni 1810	1.4301	≤ 0.07	1.0	2.0	17.5 to 19.5	-	8.0 to 10.5
		X 2 Cr Ni 1811	1.4306	≤ 0.03	1.0	2.0	18.0 to 20.0	-	10 to 12.0
		X 8 Cr Ni 19/10	1.4303	≤ 0.07	1.0	2.0	17.0 to 19.0	-	11.0 to 13.0
A 4	316	X 5 Cr Ni Mo 1712	1.4401	≤ 0.07	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10.0 to 13.0
		X 2 Cr Ni Mo 1712	1.4404	≤ 0.03	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10 to 13

3) Chemical composition of steel metric DIN 433 Flat Washers

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP °C MIN.
		C		P	S	
		min.	max.	max.	max.	
4.6, 4.8, 5.8, 6.8	Low or medium carbon steel	-	0.55	0.05	0.06	-
8.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
9.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
10.9	Medium carbon steel additives e.g. boron, Mn, Cr or Alloy steel - quenched, tempered	0.20	0.55	0.04	0.05	425
12.9	Alloy steel - quenched, tempered	0.20	0.50	0.035	0.035	380

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4) Mechanical properties of steel for metric DIN 433 Flat Washers

MECHANICAL PROPERTY		PROPERTY CLASS									
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9	
						Up to M 16	Over M 16				
Tensile Strength (Rm, N/mm ²)	nom.	400	500		600	800		900	1000	1200	
	min.	420	500	520	600	800	830	900	1040	1220	
Vickers Hardness	min.	130	155	160	190	250	255	290	320	385	
	max.	250				320	336	360	380	435	
Brinell Hardness	min.	124	147	152	181	319	242	266	295	353	
	max.	238				385	319	342	363	412	
Rockwell Hardness	min. HR	71	79	82	89	-					
	HRC	-	-	-	-	20	23	28	32	39	
	HR	95				99	-				
	max. HRC	-	-	-	-	32	34	37	39	44	
Yield Stress ReL. N/mm ²	nom.	320	300	400	480	-					
	min.	340	300	420	480	-					
Stress at permanent set limit N/mm ²	nom.	-				640		720	900	1080	
	min.	-				640	660	720	940	1100	

Disclaimer

Dimensional data and technical information for Metric DIN 433 Flat Washers was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change without notice. Aspen Fasteners makes no warranties or representations regarding the accuracy and validity of the compiled information and data. Contact the relevant standards authorities for accurate and detailed information.

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