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Product Dimensions and Weights **DIN 7349 Technical Specifications**

Metric DIN 7349 Thick Flat Washers for Bolts with Heavy Type Spring Pins

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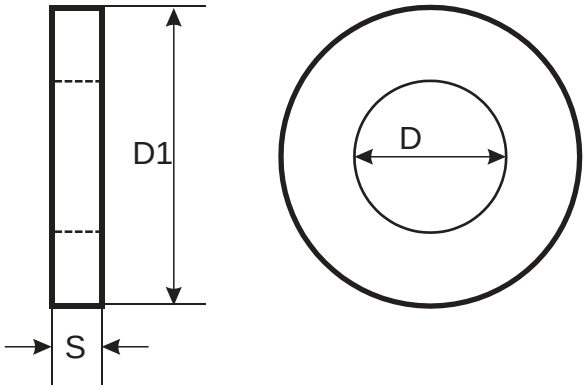

D	D1	S	Weight kg/1000pcs	For clamping sleeves according to DIN 1481	For bolt diamater
3.2	9	1	0.436	6	M3
4.3	12	2	1.24	8	M4
5.3	15	2	2.43	10	M5
6.4	17	3	4.59	12	M6
8.4	21	4	9.15	16	M8
11	25	4	12.7	18	M10
13	30	6	27.1	21	M12
15	36	6	39.6	25	M14
17	40	6	48.5	28	M16
19	44	8	77.4	32	M18
21	44	8	73.4	35	M20
23	50	8	97.1	38	M22
25	50	10	116	40	M24
28	60	10	174	45	M27
31	68	10	226	50	M30

All measurements are in mm

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Metric DIN 7349 thick flat washers for bolts with heavy type spring pins are circular flat washers with a central hole that are thicker and have a larger outer diameter (OD) than the most commonly used metric flat washer (DIN 125). Consequently, the DIN 7349 thick flat washers have a larger surface area and are used where larger bearing surfaces are required.
Aspen Fasteners offers over 500,000 unique fastener products from stock in inch and metric standard in a variety of materials and finishes. The following sizes of DIN 7349 thick flat washers are available for immediate shipping from stock: Diameters ranging from M3 to M30 in regular zinc plated steel and stainless steel A2 and stainless steel A4. View parts by clicking on the following link: Metric DIN 7349 Thick Flat Washers or contact our knowledgeable and friendly sales staff for more information and/or an immediate quote.

DIN (Deutsches Institut für Normung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 7349 thick flat washers for bolts with heavy type spring pins. The DIN standards are commonly used in Germany, Europe and globally even though the transition to ISO standards is gradually 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 as DIN 7349 thick flat washers.

1) Mechanical properties of stainless steel for metric DIN 7349 thick flat washers

Stainless steels can be divided into three groups: 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/mm2	Tensile strength PSI	Dia range	Nut Load N/mm2
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

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Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners 70,000 PSI 500 N/mm2 <=M39
	70	A2, A4	Cold worked, normal strength, formed fasteners 100,000 PSI 700 N/mm2 <=M20
	80	A2, A4	Extreme cold worked, high strength fasteners 118,000 PSI 800 N/mm2 <=M20

2) Chemical composition of stainless steel metric DIN 7349 thick 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	1	17.5 to 19.5	-	8 to10.5
		X 2 Cr Ni 1811	1.4306	≤0.03	1	2	18 to 20	-	10 to 12
		X 8 Cr Ni 19/10	1.4303	≤0.07	1	2	17 to 19	-	11 to 13
A 4	316	X 5 Cr Ni Mo 1712	1.4401	≤0.07	1	2	16.5 to 18.5	2 to 2.5	10 to 13
		X 2 Cr Ni Mo 1712	1.4404	≤0.03	1	2	16.5 to 18.5	2 to 2.5	10 to 13

3) Chemical composition of steel metric DIN 7349 thick flat washers

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP ºC 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	0.2	0.55	0.04	0.05	425
12.9	Alloy steel - quenched, tempered	0.2	0.5	0.035	0.035	380

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4) Mechanical properties of steel for metric DIN 7349 thick flat washer

MECHANICAL PROPERTY		PROPERTY CLASS								
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9
						≤ M16	> M16			
Tensile Strength (Rm, N/mm²)	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/mm²	nom.	320	300	400	480	-				
	min.	340	300	420	480	-				
Stress at permanent set limit N/mm²	nom.	-				640		720	900	1080
	min.	-				640	660	720	940	1100

Disclaimer

Dimensional data and technical information for metric DIN 7349 thick 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.