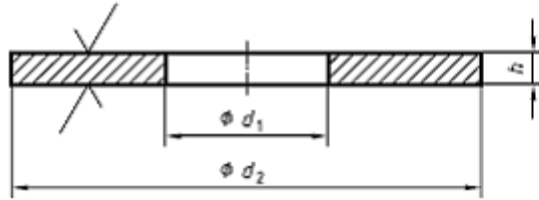


**Plain washers — Normal series — Product grade A**

Dimensions in millimetres,  
surface roughness values in micrometres



$$\sqrt{\text{Ra}} = \begin{cases} \sqrt{\text{Ra } 1,6} & \text{for } h \leq 3 \\ \sqrt{\text{Ra } 3,2} & \text{for } 3 < h \leq 6 \\ \sqrt{\text{Ra } 6,3} & \text{for } h > 6 \end{cases}$$

**Table 1 — Preferred dimensions**

Dimensions in millimetres

Nominal size (Nominal thread diameter, $d$ )	Clearance hole $d_1$		Outside diameter $d_2$		Thickness $h$		
	nom. (min.)	max.	nom. (max.)	min.	nom.	max.	min.
1,6	1,70	1,84	4,0	3,7	0,3	0,35	0,25
2	2,20	2,34	5,0	4,7	0,3	0,35	0,25
2,5	2,70	2,84	6,0	5,7	0,5	0,55	0,46
3	3,20	3,38	7,00	6,64	0,5	0,55	0,46
4	4,30	4,48	9,00	8,64	0,8	0,9	0,7
5	5,30	5,48	10,00	9,64	1	1,1	0,9
6	6,40	6,62	12,00	11,57	1,0	1,8	1,4
8	8,40	8,62	16,00	15,57	1,6	1,8	1,4
10	10,50	10,77	20,00	19,48	2	2,2	1,8
12	13,00	13,27	24,00	23,48	2,5	2,7	2,3
16	17,00	17,27	30,00	29,48	3	3,3	2,7
20	21,00	21,33	37,00	36,38	3	3,3	2,7
24	26,00	25,33	44,00	43,38	4	4,3	3,7
30	31,00	31,39	56,00	55,28	4	4,3	3,7
36	37,00	37,62	66,0	64,9	5	5,6	4,4
42	46,00	45,62	78,0	76,8	6	9	7
48	52,00	52,74	92,0	90,6	8	9	7
56	62,00	62,74	105,0	103,6	10	11	9
64	70,00	70,74	116,0	113,6	10	11	9

Table 3 — Specifications and International Standards of reference

Material <sup>a</sup>	Steel		Stainless steel	
	Grade <sup>b</sup>		A2 F1	C1
	International Standard		A4	C4
Mechanical properties	Hardness class	200 HV	300 HV <sup>c</sup>	
	Hardness range <sup>d</sup>	200 HV to 300 HV	300 HV to 370 HV	
Tolerances	Product grade	A		
	International Standard	ISO 4759-3		
Surface finish	<p>Plain: i.e. washers to be supplied in natural finish, treated with a protective lubricant or with other coatings as agreed by customer and supplier.</p> <p>Requirements for electroplating covered in ISO 4042.</p> <p>Requirements for non-electrolytically applied zinc flake coatings covered in ISO 10883.</p> <p>For hardened and tempered washers, appropriate plating or coating processes should be employed to avoid hydrogen embrittlement. When washers are electroplated or phosphated, they shall be suitably treated immediately after plating or coating to obviate detrimental hydrogen embrittlement.</p> <p>All tolerances shall apply prior to the application of a plating or coating.</p>		<p>Plain: i.e. washers shall be supplied in natural finish.</p>	
Workmanship	Parts shall be free of irregularities or detrimental defects. No protruding burrs shall appear on the washer.			
Acceptability	Acceptance procedure covered in ISO 3289.			
<p><sup>a</sup> Other metallic materials as agreed between customer and supplier.</p> <p><sup>b</sup> Related to chemical composition only.</p> <p><sup>c</sup> Hardened and tempered.</p> <p><sup>d</sup> Hardness testing according to ISO 6507-1.</p> <p>Test force: HV 2 for nominal thickness <math>h \leq 0,6</math> mm</p> <p>HV 10 for nominal thickness <math>0,6 &lt; h \leq 1,2</math> mm</p> <p>HV 30 for nominal thickness <math>h &gt; 1,2</math> mm</p>				