

UDC 621.882.42

May 1990

		Washers for use in timber constructions				DIN 440			
Scheiben, vorwiegend für Holzkonstruktionen					Supersedes July 1974 edition.				
<i>In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.</i>									
Dimensions in mm									
1 Scope and field of application									
This standard specifies requirements for product grade C washers with a larger outside diameter. Such washers may be provided with a round hole (type R) for M5 to M52 bolts or a square hole (type V) for M5 to M22 bolts.									
The preferred application of these washers is in bolt/nut assemblies for use in timber constructions.									
2 Dimensions									
2.1 Type R, with round hole									
Table 1.									
Nominal size	For thread size	Hole diameter, d_1		Outside diameter, d_2		Thickness, h			Approximate mass (7.85 kg/dm ³), per 1000 units, in kg
		min. = nominal size	max.	max. = nominal size	min.	Nominal size	max.	min.	
5,5	M5	5,5	5,8	18	16,9	2	2,3	1,7	3,62
6,6	M6	6,6	6,96	22	20,7	2	2,3	1,7	5,43
9	M8	9	9,36	28	26,7	3	3,6	2,4	13,0
11	M10	11	11,43	34	32,4	3	3,6	2,4	19,1
13,5	M12	13,5	13,93	44	42,4	4	4,6	3,4	43,3
15,5	M14	15,5	15,93	50	48,4	4	4,6	3,4	55,7
17,5	M16	17,5	18,2	56	54,1	5	6	4	87,2
22	M20	22	22,84	72	70,1	6	7	5	174
24	M22	24	24,84	80	78,1	6	7	5	215
26	M24	26	26,84	85	82,8	6	7	5	242
30	M27	30	30,84	98	95,8	6	7	5	322
33	M30	33	34	105	102,8	6	7	5	368
36	M33	36	37	112	109,8	6	7	5	416
39	M36	39	40	125	122,5	8	9,2	6,8	695
42	M39	42	43	140	137,5	8	9,2	6,8	881
45	M42	45	46	150	147,5	8	9,2	6,8	1010
48	M45	48	49	160	157,5	8	9,2	6,8	1150
52	M48	52	53,2	170	167,5	10	11,2	8,8	1620
56	M52	56	57,2	180	177,5	10	11,2	8,8	1800

Continued on pages 2 and 3

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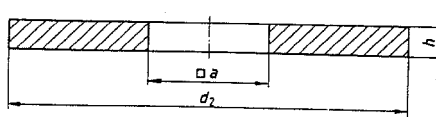
2.2 Type V, with square hole

Table 2.

Nominal size	For thread size	Hole diameter, a		Outside diameter, d_2		Thickness, h			Approximate mass (7,85 kg/dm ³), per 1000 units, in kg
		min. = nominal size	max.	max. = nominal size	min.	Nominal size	max.	min.	
5,5	M5	5,5	5,8	18	16,9	2	2,3	1,7	3,52
6,6	M6	6,6	6,96	22	20,7	2	2,3	1,7	5,28
9	M8	9	9,36	28	26,7	3	3,6	2,4	12,6
11	M10	11	11,43	34	32,4	3	3,6	2,4	18,5
14	M12	14	14,43	44	42,4	4	4,6	3,4	41,6
18	M16	18	18,7	56	54,1	5	6	4	84,0
22	M20	22	22,84	72	70,1	6	7	5	169
24	M22	24	26,84	80	78,1	6	7	5	210

3 Technical delivery conditions

Material		Steel
Mechanical properties	Hardness class	100 HV
	Hardness HV 10	100 to 250
Limit deviations and geometrical tolerances	Product grade	C
	As specified in	DIN 522.
Surface finish	Bright DIN 522 shall apply with regard to surface roughness. DIN 267 Part 9 shall apply with regard to electroplating. DIN 267 Part 10 shall apply with regard to hot-dip galvanizing, any other type of surface protection being subject to agreement.	
Acceptance inspection	DIN 522 shall apply with regard to acceptance inspection.	

4 DesignationDesignation of a type R washer of nominal size 22 and hardness class 100 HV¹⁾:

Washer DIN 440 - R 22 - 100 HV

The DIN 4000-3-1 tabular layout of article characteristics shall apply for washers complying with this standard.

¹⁾ Hardness class 100 HV shall also be used where no material or only the symbol 'St' is specified in existing documentation.

Standards referred to

- DIN 267 Part 9 Fasteners; technical delivery conditions; electroplated fasteners
DIN 267 Part 10 Fasteners; technical delivery conditions; hot-dip galvanized components
DIN 522 Metal washers; technical delivery conditions
DIN 4000 Part 3 Tabular layout of article characteristics for washers

Previous editions

DIN 440: 10.36, 05.43, 07.74.

Amendments

The following amendments have been made to the July 1974 edition.

- a) For type R, nominal sizes 14 and 18 have been changed to 13,5 and 17,5.
- b) For type R, nominal size 15,5 has been included and the outside diameter for nominal sizes 13,5, 17,5, 22 and 26 has been changed.
- c) For type V, the outside diameter for nominal sizes 14, 18 and 22 has been changed.
- d) For types R and V, the washer thickness for nominal size 22 has been changed from 5 mm to 6 mm.
- e) Limits of size have been given on the basis of the tolerances specified.
- f) Hardness class 100 HV has been introduced.
- g) The technical delivery conditions have been revised.
- h) The standard has been editorially revised.

Explanatory notes

The clearance hole diameter, outside diameter and washer thickness have been harmonized with the specifications given in the 1983 edition of ISO 7094*) where such were available. At present, this ISO Standard or its revised version cannot be adopted as DIN Standard since, in Germany, a considerably greater number of sizes is required than specified in the ISO Standard.

International Patent Classification

F 16 B 43/00

*) Obtainable from *Beuth Verlag GmbH (Auslandsnormenverkauf)*, Burggrafenstraße 6, D-1000 Berlin 30.