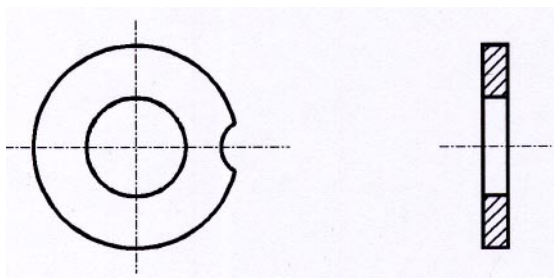


**PLAIN STEEL WASHERS
QUALITY CLASS 22H**

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NO USE RESTRICTION*This is a translation, the French original shall be used in all cases of litigation**Date of translation : 22/11/2004***1.OBJECT AND FIELD OF APPLICATION**

This norme defines the characteristic of plain steel washers with nominal diameter of 5 to 24 mm inclusive, designed to be used with screws of quality class 8.8 and 10.9.

2.INSTRUCTIONS FOR USE**2.1.APPLICATION**

These washers must be used with screws, studs or similar parts of quality class of 8.8 or 10.9, and in all cases where the compression stress to which they are subjected, even locally, is between 400 and 730 Mpa (limit values included.)

2.2.CHOICE OF WASHERS

The choice of the series is derived from the design, the selected washer must provide a bearing surface on the part such that the stresses define in norme B13 3120 are not exceeded.

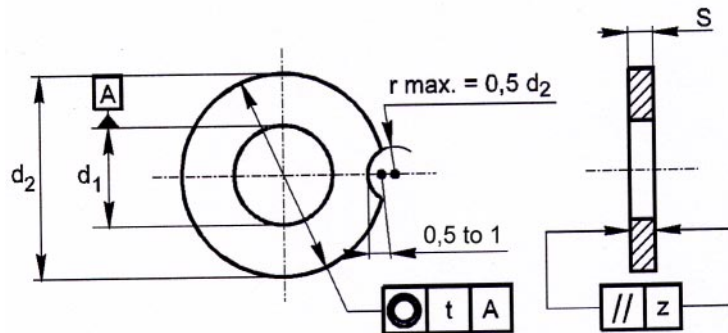
For screws or studs the elastic limit is taken as the basis for calculation (see C10 0020.)

Washers with numbers shown in the table in § 6 are to be used unless this is technically impossible. If the use of another coating is essential consult the Standard Fasteners correspondent to obtain the part number.

Note: *Uncoated washers must only be used in locations which are protected from corrosion or where a coating is not allowed.*

3.DIMENSIONS

Deformation of the internal diameter d_1 : see norme A32 4125.



Nominal Diameter	d_1		NORMAL SERIES (Symbol N)						LARGE SERIES (Symbol L)					
			d_2		S		t	z	d_2		S		t	z
	nom	tol	nom	tol	nom	tol			nom	tol	nom	tol		
5	5,25	$\pm 0,15$	10	$\pm 0,20$	1	$\pm 0,10$	0,30	0,10	16	$\pm 0,20$	1,5	$\pm 0,20$	0,36	0,10
6	6,25	$+0,20$ $-0,15$	12	$\pm 0,20$	1,2	$\pm 0,20$	0,36	0,10	18	$\pm 0,20$	2	$\pm 0,20$	0,36	0,10
7	7,40	$+0,20$ $-0,15$	14	$\pm 0,20$	1,5	$\pm 0,20$	0,36	0,10	20	$\pm 0,25$	2	$\pm 0,20$	0,42	0,10
8	8,40	$+0,20$ $-0,15$	16	$\pm 0,20$	1,5	$\pm 0,20$	0,36	0,10	22	$\pm 0,25$	2,5	$\pm 0,20$	0,42	0,10
10	10,40	$+0,20$ $-0,15$	20	$\pm 0,25$	2	$\pm 0,20$	0,42	0,10	27	$\pm 0,25$	2,5	$\pm 0,20$	0,42	0,10
12	12,50	$+0,25$ $-0,15$	24	$\pm 0,25$	2,5	$\pm 0,20$	0,42	0,10	32	$\pm 0,30$	2,5	$\pm 0,20$	0,50	0,10
14	14,50	$+0,25$ $-0,15$	27	$\pm 0,25$	2,5	$\pm 0,20$	0,42	0,10	36	$\pm 0,30$	2,5	$\pm 0,20$	0,50	0,10
16	16,50	$+0,25$ $-0,15$	30	$\pm 0,25$	3	$\pm 0,30$	0,42	0,15	40	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15
18	19	$+0,35$ $-0,15$	32	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15	45	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15
20	21	$+0,35$ $-0,15$	36	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15	50	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15
22	23	$+0,35$ $-0,15$	40	$\pm 0,30$	3	$\pm 0,30$	0,50	0,15	-	$\pm 0,30$	-	$\pm 0,30$	0,50	0,15
24	25	$+0,35$ $-0,15$	45	$\pm 0,30$	4	$\pm 0,30$	0,50	0,15	-	$\pm 0,30$	-	$\pm 0,30$	0,50	0,15

4.SPECIFICATIONS

4.1.MATERIAL

Sheet steel, hardness HV 220 to 310 obtained by a suitable heat treatment (hardening and tempering)

The grade usually corresponds to that of medium hard steel: the heat treatment must not cause any decarburisation or shrinkage cracks.

After agreement from the authorised Technical Services of the group, the grades for which the hardness is obtained by work hardening may be permitted.

Washers may be obtained by machining from a bar.

4.2.PROTECTION

Washers with no specific coating must be lightly oiled with anti-corrosion oil. This oil must be easily removed and must have no adverse effect on any subsequent protection by electrolytic coating or any other process.

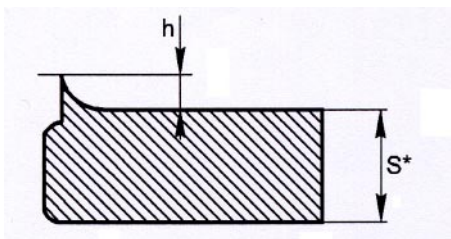
Washers are supplied zinc coated according to the clauses stipulated in norme B15 4102. Electrolytic zinc plating, according to normes B15 4100 and B15 4101, is tolerated until 01/07/2006. Any change to the coating must be validated by the relevant PSA departments.

4.3.APPEARANCE

Washers must not be oxidised and must show no traces of scale. The cut should be clean. The bearing surfaces must be smooth.

A burr may be tolerated.

The maximum values permitted for the height of the burr must conform to the values indicated in the following table.



S*: washer thickness

S	$S \leq 0,4$	$0,4 < S \leq 0,63$	$0,63 < S \leq 1,0$	$1,0 < S \leq 1,6$	$1,6 < S \leq 2,5$	$2,5 < S \leq 4,0$
h	0,02	0,02	0,03	0,05	0,07	0,12

5.SUPPLY OF WASHERS

The general requirements concerning the supply of washers are given in the technical specifications B20 0110

6.REFERENCES

Quality Class: 22H

Coating: Z10FJR (B15 4101.)

Designation:

RONDELLE PLATE 12 D24 E2,5 AC22H Z10FJR

Nominal diameter	NORMAL (N)	LARGE (L)
5		79 03 053 566*
6	79 03 053 388 79 03 053 484*	79 03 053 389 79 03 053 492*
8	79 03 053 392 79 03 053 485*	79 03 053 393 79 03 053 486*
10	79 03 053 394 79 03 053 489* 79 03 053 384**	79 03 053 395
12	79 03 053 396	79 03 053 397
14	79 03 053 543	

* Z10FNR coating

** No coating

7. RECORDS AND REFERENCE DOCUMENTS

7.1. RECORDS

7.1.1. CREATION

- OR : 01/09/1978 – CREATION OF THE NORME.

7.1.2. SUBJECT OF THE MODIFICATION

- E: 12/03/2004 – Norme C22 5315 inserted and modifications to § 6 and 2.2
- D: 11/12/1996 – INTRODUCED INTO IDEM (French only)

7.2 REFERENCE DOCUMENTS

7.2.1. PSA DOCUMENTS

7.2.1.1. Normes

B13 3120	Design of a threaded assembly – Calculation method
B15 4101	Coatings – Electrolytic zinc deposits and associated finishes
B20 0110	Supply of products – General requirements
C10 0020	Screws and studs – Classification and characteristics

7.2.1.2. Others

7.2.2. EXTERNAL DOCUMENTS

7.3. EQUIVALENT TO:

7.4. CONFORMS TO:

7.5. KEY-WORDS: