

Technical data sheet

Title	Flat washer
Standard	NF E 25 513

1.- Functions of washers.

The main functions of washers are:

- 1.- To protect contact surfaces against scratches or wear that may be caused by screws or nuts by rubbing.
- 2.- To distribute the tightening force evenly to obtain local pressures that are close to the average pressure.
- 3.- To move the tightening force to different areas of the head of the screw or nut. Oversized or torn holes.
- 4.- To reduce the risks of loosening due to increase in the friction coefficient on the screw or nut (serrated or ribbed washers)
- 5.- To secure a possible loss of tightening torque due to deformation of the parts (elastic washers)
- 6.- To compensate for the lack of parallelism of the parts or uneven surfaces.
- 7.- Watertightness between the head or screw or nut and the part to be tightened (polyamide coated washer).
- 8.- Fastening of cables to the electrical connections.

2- Application and classes of washers

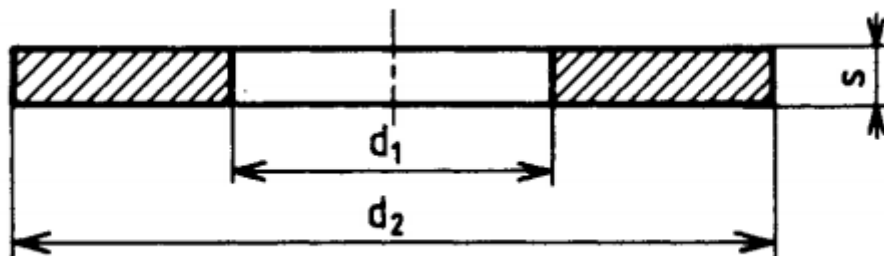
NF E25 513 steel flat washers are class C washers.

There are four series for this washer standard: Series Z, series M, series L and series LL.

These washers are made of steel and have a minimum hardness of 160HV, with a zinc plated finish.

Also available in stainless steel, grade A2 (LL series and M series) or A4 (LL series only), with a minimum hardness of 150 HV.

3.- Dimensions of washers



METRIC	d1	s	d2 Z	d2 M	d2 L	d2 LL
3	3.2	0.8	6	8	12	14
4	4.3	0.8	8	10	14	16
5	5.3	1	10	12	16	20
6	6.4	1.2	12	14	18	24
7	7.4	1.5	14	16	20	27
8	8.4	1.5	16	18	22	30
10	10.5	2	20	22	27	36
12	13	2.5	24	27	32	40
14	15	2.5	27	30	36	45
16	17	3	30	32	40	50
18	19	3	32	36	45	55
20	21	3	36	40	50	60
22	23	3	40	45	55	*
24	25	4	45	50	60	*
27	28	4	48	55	65	*
30	31	4	52	60	70	*
33	34	5	*	65	*	*
36	37	5	*	70	*	*
39	40	6	*	75	*	*
42	43	6	*	80	*	*
45	46	7	*	85	*	*
48	50	7	*	90	*	*
52	54	8	*	100	*	*

*Non-standardised measures.