SLOVENSKI STANDARD
SIST EN 2138:2001

01-januar-2001

Aerospace series - Washers, flat, in steel, cadmium plated

Aerospace series - Washers, flat, in steel, cadmium plated

Luft- und Raumfahrt - Scheiben, aus Stahl, verkadmet

Série aérospatiale - Rondelles plates, en acier, cadmiées

Ta slovenski standard je istoveten z: **EN 2138:1999**

ICS:

49.030.50	Podložke in drugi blokirni elementi	Washers and other locking elements

SIST EN 2138:2001 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 2138

December 1999

ICS 49.030.50

Supersedes EN 2138:1993 + AC:1998

English version

Aerospace series - Washers, flat, in steel, cadmium plated

Série aérospatiale - Rondelles plates, en acier, cadmiées

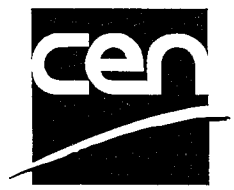
Luft- und Raumfahrt - Scheiben, aus Stahl, verkadmet

This European Standard was approved by CEN on 30 September 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 2138:1999 E

Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the characteristics of flat steel washers, cadmium plated, for maximum operating temperature 235 °C, for aerospace applications.

They are intended for use primarily underneath nuts, for use underneath bolt heads the compatibility shall be checked.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 2000 Aerospace series - Quality assurance - EN aerospace products - Approval of the quality system of manufacturers

EN 2133 EN 2133 Aerospace series - Cadmium plating of steels with specified tensile strength ≤ 1 450 MPa, copper, copper alloys and nickel alloys

EN 2209 Steel FE-PL43S - 900 MPa ≤ R_m ≤ 1 100 MPa - Sheets, strips and plates 0,5 mm ≤ a ≤ 20 mm - Aerospace series [1)]

EN 2424 Aerospace series - Marking of aerospace products

EN 2438 Steel FE-PL62 - 900 MPa ≤ R_m ≤ 1 100 MPa - Bars D_e ≤ 40 mm - Aerospace series [1)]

3 Required characteristics

3.1 Configuration - Dimensions - Masses

See figure 1 and tables 1 and 2. Dimensions and tolerances are expressed in millimetres and apply after surface treatment.

3.2 Materials

EN 2209 or EN 2438

3.3 Surface treatment

EN 2133, 7 µm to 10 µm

Black colour option: code F (EN 2133, except for corrosion resistance requirement)

1) Published as AECMA Standard at the date of publication of this standard

6,3 [3,2] Values in micrometres apply prior to surface treatment.

Remove sharp edges 0,1 to 0,2.

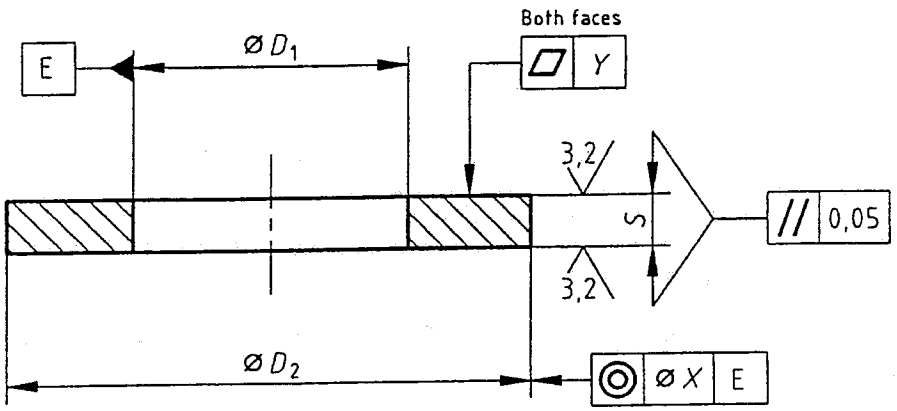


Figure 1

Table 1

Diameter code	D_1		D_2 h14	$S \pm 10\,\%$						X	Y
016	1,8	H13	3,2	0,4	–	–	–	–	–	0,3	0,18
020	2,2		4	0,4	–	–	–	–	–		
025	2,7		5	0,5	–	–	–	–	–		
030	3,2		6	0,5	1	–	–	–	–		
035	3,7		7	0,5	1	–	–	–	–	0,5	
040	4,3		8	0,5	1	1,6	–	–	–		
050	5,5		10	0,5	1	1,6	–	–	–		
060	6,5		12	0,5	1	1,6	2	–	–		
070	7,5		14	0,5	1	1,6	2	–	–		
080	8,5	H14	16	0,5	1	1,6	2	–	–		
100	10,5		20	–	1	1,6	2	2,5	–		
120	12,5		24	–	1	1,6	2	2,5	–		
140	14,5		26	–	1	1,6	2	–	3,2		0,25
160	16,5		28	–	1	1,6	2	–	3,2		
180	18,5		31	–	1	1,6	2	–	3,2		
200	20,5		35	–	–	1,6	2	–	3,2		
220	22,5		37	–	–	1,6	2	–	3,2		

Table 2

Thickness	*S*	0,4	0,5	1,0	1,6	2,0	2,5	3,2
	Code	04	05	10	16	20	25	32
Diameter code		Mass [a]						
016		0,017	–	–	–	–	–	–
020		0,028	–	–	–	–	–	–
025		–	0,05	–	–	–	–	–
030		–	0,08	0,16	–	–	–	–
035		–	0,11	0,22	–	–	–	–
040		–	0,14	0,28	0,45	–	–	–
050		–	0,21	0,43	0,69	–	–	–
060		–	0,31	0,62	1,00	1,25	–	–
070		–	0,43	0,86	1,37	1,71	–	–
080		–	0,56	1,13	1,80	2,25	–	–
100		–	–	1,77	2,84	3,55	4,44	–
120		–	–	2,57	4,12	5,14	6,43	–
140		–	–	2,85	4,57	5,70	–	9,15
160		–	–	3,14	5,02	6,27	–	10,04
180		–	–	3,79	6,07	7,58	–	12,15
200		–	–	4,93	7,90	9,86	–	15,80
220		–	–	–	8,47	10,57	–	16,94

[a] Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm^3, given for information purposes only

4 Designation

EXAMPLE:

Description block	Identity block
WASHER	EN2138-08020F

Number of this standard

Diameter code (see table 1)

Thickness code (see table 2)

Black colour code (see 3.3)

NOTE: If necessary, the code l9005 shall be placed between the description block and the identity block.

5 Marking

EN 2424, style G

6 Quality assurance

EN 2000