

BS EN 2648:2013



BSI Standards Publication

Aerospace series — Washers, concave, in alloy steel, cadmium plated

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National foreword

This British Standard is the UK implementation of EN 2648:2013. It supersedes BS EN 2648:1995 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/12, Aerospace fasteners and fastening systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

EN 2648

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2013

ICS 49.030.50

Supersedes EN 2648:1995

English Version

Aerospace series - Washers, concave, in alloy steel, cadmium platedSérie aéronautique - Rondelles concaves, en acier allié,
cadmiéesLuft- und Raumfahrt - Scheiben, für Neigungsausgleich, aus
legiertem Stahl, verkadmet

This European Standard was approved by CEN on 28 September 2013.

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Foreword

This document (EN 2648:2013) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries 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 ASD, 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of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

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1 Scope

This standard specifies the characteristics of concave washers, in alloy steel, cadmium plated, maximum operating temperature 235 °C.

They are intended to be used with nuts to EN 2647.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2133, *Aerospace series — Cadmium plating of steels with specified tensile strength $\leq 1\,450$ MPa, copper, copper alloys and nickel alloys*

EN 2424, *Aerospace series — Marking of aerospace products*

EN 2448, *Aerospace series — Steel FE-PL1503 (35CrMo4) — $900\text{ MPa} \leq R_m \leq 1\,100\text{ MPa}$ — Bars — $D_e \leq 40\text{ mm}$*

EN 2542, *Aerospace series — Steel FE-PL1502 (25CrMo4) — Annealed — Bar and wire — $D_e \leq 40\text{ mm}$ — for prevailing torque nuts*

EN 2647, *Aerospace series — Nuts, hexagonal, self-locking, ball seat, in alloy steel, cadmium plated, MoS₂ lubricated — Classification: 900 MPa (at ambient temperature) / 235 °C*

EN 3330, *Aerospace series — Steel FE-PL1503 (35CrMo4) — Annealed — Bar and wire — $D_e \leq 40\text{ mm}$ — for prevailing torque nuts*

3 Required characteristics

3.1 Configuration – Dimensions – Masses

See Figure 1 and Table 1. Dimensions and tolerances are expressed in millimetres and apply after surface treatment.

3.2 Materials

Steel FE-PL1502 (25CrMo4), chemical composition in conformity with EN 2542, characteristics after manufacture: $1\,250\text{ MPa} \leq R_m \leq 1\,400\text{ MPa}$, $40 \leq \text{HRC} \leq 43$.

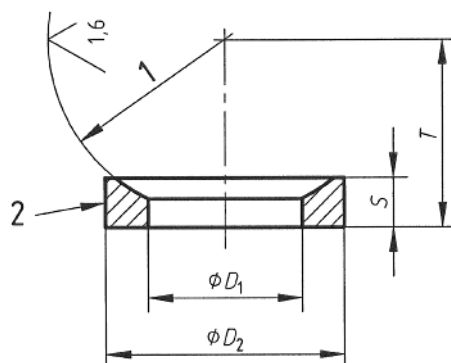
Or steel FE-PL1503 (35CrMo4), chemical composition in conformity with EN 3330 or EN 2448 or equivalent, characteristics after manufacture: $1\,250\text{ MPa} \leq R_m \leq 1\,400\text{ MPa}$, $40 \leq \text{HRC} \leq 43$.

3.3 Surface treatment

EN 2133, 8 μm to 14 μm .

$\sqrt{6,3}$ $\left(\sqrt{1,6} \right)$ Values in micrometres apply prior to surface treatment.

Remove sharp edges 0,1 to 0,4.



Key

- 1 *R* spherical
- 2 Marking

Figure 1

Table 1

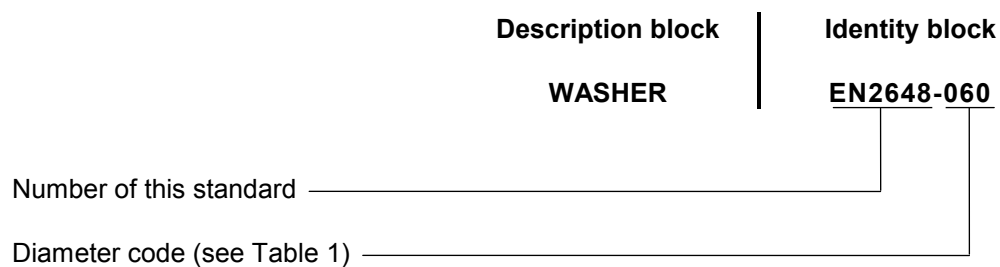
Diameter code ^a	D_1 +0,2 0	D_2 $\pm 0,2$	R +0,5 0	S $\pm 0,1$	T	Mass ^b
050	7	10,3	8	2	8,5	0,8
060	8,2	13	9	2,5	9,2	1,4
080	11	17	12,5	3,5	13,25	3,3
100	13,8	21	16	4	16,9	6,5
120	16,5	24	18	5	19,5	8,9

^a Corresponds to the diameter code of the nut EN 2647.

^b Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm³, given for information purposes only.

4 Designation

EXAMPLE



NOTE If necessary, the code I9005 shall be placed between the description block and the identity block.

5 Marking

EN 2424, style F plus diameter code. See Figure 1.

6 Qualification

See EN 2647.

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