

Code system/Sistema di codifica/Système de codification/sistema de codificaciòn/Kodifizierungssystem

1. Scope and field of application

These technical conditions are in particular related to threaded fasteners (mainly bolts and nuts), but are also applicable to the whole range of mechanical fasteners.

2. Electroplated coatings

An electrolytically applied coating shall be defined as a protective metallic layer being deposited onto the surface of metal articles by immersing these parts in an aqueous solution through which an electrical current is passed.

Note: The use of the nomenclature “galvanizing” for this treatment is not correct.

This information on electroplated coatings corresponds with DIN 267 Part 9 and ISO 4042.

3. Code system

The electroplated coatings of mechanical fasteners are designated by a code consisting of a combination of two capital letters and a number.

This callout system is built up as follows:

- a capital letter for the coating metal (Table 1)
- a number for the minimum layer thickness (coating structure) (Table 2)
- a capital letter for the degree of gloss and after-treatment (Table 3)

Code letter	Coating metal	Symbol
A	Zinc	Zn
B	Cadmium	Cd
C	Copper	Cu
D	Brass	CuZn
E	Nickel	Ni
F	Nickel-chrome 1)	NiCr
G	Copper-nickel	CuNi
H	Copper-nickel-chrome 1)	CuNiCr
J	Tin	Sn
K	Copper-tin	CuSn
L	Silver	Ag
N	Copper-silver	CuAg
P	Zinc-Nickel 3)	ZnNi
Q	Zinc-Cobalt 3)	ZnCo
R	Zinc-iron 3)	ZnFe

1) Thickness of chrome layer 0,3 µm
 3) Not in ISO 4042

	Layer thickness (coating structure) in μm	
Code number	1 coating metal	2 coating metals
0 1)	–	–
1	3	–
2	5	2+ 3
3	8	3+ 5
4	12	4+ 8
5	15	5+10
6	20	8+12
7 2)	25	10+15
8 2)	32	12+18
9 2)	40	16+24 3)

1) Code number 0 applies to screw threads below
M 1.6, where no specific layer thickness can be specified.
2) Does not apply to threaded components.
3) Not in ISO 4042

Code letter	Degree of gloss	Chromating in accordance with DIN 50 941 Process group	Self-color of chromate layer passivation by chromate
A	mt (dull) (mat)	none 1)	none
B	mt (dull) (mat)	B	bluish to bluish iridescent 2)
C	mt (dull) (mat)	C	yellowish glistening to yellowish-brown, iridescent
D	mt (dull) (mat)	D	olive green to olive brown
E	bk (bright)	none 1)	none
F	bk (bright)	B	bluish to bluish iridescent 2)
G	bk (bright)	C	yellowish glistening to yellowish-brown, iridescent
H	bk (bright)	D	olive green to olive brown
J	gl (glossy)	none 1)	none
K	gl (glossy)	B	bluish to bluish iridescent 2)
L	gl (glossy)	C	yellowish glistening to yellowish-brown, iridescent
M	gl (glossy)	D	olive green to olive brown
N	hgl (high gloss)	none	–
P	bel (optional)	B, C or D 3) at manufacturer's discretion	as for process group B, C or D
R	mt (dull) (mat)	F	brownish black to black
S	bk (bright)	F	brownish black to black
T	gl (glossy)	F	brownish black to black
U	all finishes		no chromate treatment

1) Passivation treatments are possible only with zinc or cadmium coatings.
2) However, process group A Only applies to Zn coatings
3) Process groups B, C or D in accordance with DIN 50 941 only apply to cadmium and zinc coatings.
In the case of other electroplated coatings, "P" in the code symbol signifies "degree of gloss optional".

Ordering code for electroplated coatings for commercial fasteners							
Coating		Zinc-chromated				Nickel	Copper nickel
Degree of gloss		Glossy Color none	Glossy Color bluish	Glossy Color yellowish	Glossy Color black	Glossy	Glossy
Nominal size	Nominal size						
metric	inch					-	-
< 5 mm	< 3/16 "	A1J	A1K	A1L	A1T	E1J	G2J
5 < 10 mm	3/16" < 3/8 "	A2J	A2K	A2L	A2T	E2J	G2J
> 10 mm	> 3/8 "	A3J	A3K	A3L	A3T	E3J	G3J

Example of coding: A3L means zinc-plating (A in Table 1) with a minimum layer thickness of 8 µm (3 in Table 2) and yellow-chromated with a glossy degree of gloss (L in Table 3).

Callout Example: Hexagon bolt DIN 931 - M12 x 50 - 8.8 - A3L.

Chromate (passivate) effected immediately after electroplating by short immersing in chromic acid solutions. The chromating process increases the corrosion protection and prevents a starting and a discolouring of the zinc layer. The protective effect of the chromate layer is different depending upon group of procedures (see table).