International Standard 2635

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Aircraft — Conductors for general purpose aircraft electrical cables and aerospace applications — Dimensions and characteristics

Aéronefs — Conducteurs pour câbles électriques pour usage général aéronautique et pour applications aérospatiales — Dimensions et caractéristiques

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2635 was developed by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, and was circulated to the member bodies in May 1978.

It has been approved by the member bodies of the following countries :

Australia	India	South Africa, Rep. of
Austria	Ireland	Spain
Belgium	Italy	United Kingdom
Brazil	Japan	USA
Canada	Korea, Dem. P. Rep. of	Yugoslavia
France	Mexico	
Germany, F. R.	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Czechoslovakia
USSR

Printed in Switzerland

Aircraft — Conductors for general purpose aircraft electrical cables and aerospace applications — Dimensions and characteristics

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions and characteristics of multi-wire conductors for general purpose aircraft electrical cables and aerospace applications over the nominal cross-sectional area range 0,15 to 107 mm^2.

It does not apply to conductors for fire-resistant cables or for thermocouple extension cables. Conductors of nominal cross-sectional area 0,25 mm^2 and 0,15 mm^2 are produced in high-strength copper alloy, and conductors of nominal cross-sectional areas greater than 0,25 mm^2 are produced in copper of electrotechnical quality.

2 REQUIRED CHARACTERISTICS

The dimensions, electrical resistance, mechanical properties and mass of the conductors shall conform to the values shown in the table.

These conductors in copper and copper alloy may be unplated (code letter A), tinned (code letter B), silver plated (code letter C) or nickel plated (code letter D) in accordance with the requirements of, and to the thicknessses required by, the individual specification for which the conductors are being used. The thickness of the silver plating (code letter C) shall be at least 1,0 µm and the thickness of the nickel plating, (code letter D), at least 1,3 µm.

3 CONSTRUCTION

Column 3 of the table gives the minimum number of wires to be used for each cross-section of conductor, and column 4 gives the nominal wire sizes over the range of nominal cross-sections from 0,15 to 5 mm^2. This system of defining construction affords some freedom of choice to the constructor and the user, provided that the requirements of columns 5 to 11 of the table and the requirements of the individual cable specification are complied with.

4 PACKAGING AND LABELLING

Conductors complying with this International Standard shall be uniformly wound on reels, bobbins or in coils and shall be protected against damage and the ingress of moisture.

Each reel, bobbin or coil shall have firmly attached to it a label bearing the following details :

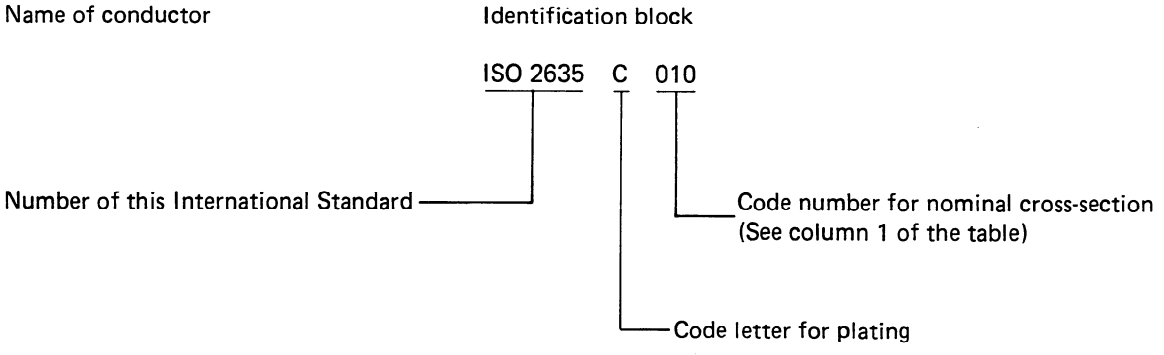

TABLE — Required dimensions and characteristics

1	2	3	4	5	6	7	8	9	10	11	12
Code number	Nominal cross-sectional area	Number of wires in conductor	Wire nominal diameter	Conductor diameter		Electrical resistance[1] at 20 °C Ω/km max. Types		Mechanical properties		Mass[3]	Approximate gauge AWG[4]
								Elongation at break[2]	Ultimate tensile strength		
	mm²	min.	mm	mm min.	mm max.	A and C	B and D	% min.	N min.	kg/km max.	
001	0,15	19	0,10	0,46	0,53	149	160	6	46	1,60	26
002	0,25	19	0,12	0,55	0,62	106	114	6	67	2,18	24
004	0,4	19	0,15	0,72	0,80	55,3	60,0	10	71	3,43	22
006	0,6	19	0,20	0,94	1,04	31,0	33,2	10	127	5,95	20
010	1	19	0,25	1,18	1,29	19,6	21,1	10	198	9,16	18
012	1,2	19	0,30	1,39	1,53	13,6	14,5	10	285	13,2	16
020	2	37	0,25	1,68	1,82	10,2	10,9	10	385	18,0	14
030	3	37	0,32	2,12	2,28	6,40	6,80	10	545	28,5	12
050	5	37	0,40	2,69	2,88	4,00	4,20	10	1 000	46,0	10
090	9	117	–	–	4,40	2,30	2,40	10	–	86,1	8
140	14	127	–	–	5,50	1,50	1,55	10	–	133	6
220	22	182	–	–	6,80	0,910	0,940	10	–	214	4
340	34	201	–	–	8,60	0,585	0,620	10	–	333	2
420	42	245	–	–	9,50	0,480	0,500	10	–	402	1
530	53	322	–	–	10,7	0,375	0,390	10	–	526	0
680	68	416	–	–	12,1	0,295	0,305	10	–	685	00
850	85	513	–	–	13,6	0,233	0,240	10	–	849	000
107	107	660	–	–	15,2	0,183	0,190	10	–	1 090	0000

1) The electrical resistance at another temperature can be calculated by the following formulae :

$R_\theta = [1 + 0{,}004\ (\theta - 20)]\ R_{20}$ for copper conductors

$R_\theta = [1 + 0{,}003\,5\ (\theta - 20)]\ R_{20}$ for copper alloy conductors

where

θ is the numerical value of Celsius temperature for which R_θ is to be calculated;

R_{20} is the electrical resistance at 20 °C;

R_θ is the electrical resistance at θ °C.

2) With sections 0,15 and 0,25 mm², the elongation at break is measured on the complete conductor.

3) Surface coatings are not taken into account, as their effect is small.

4) AWG = American Wire Gauge.