

BS EN 4612-002:2011



BSI Standards Publication

**Aerospace series — Cables,  
electrical, for general purpose,  
single and multicore assembly  
— XLETFE Family — Jacketed or  
screened and jacketed**

Part 002: General

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**National foreword**

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

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EUROPEAN STANDARD

**EN 4612-002**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2011

ICS 49.060

English Version

**Aerospace series - Cables, electrical, for general purpose,  
single and multicore assembly - XLETFE Family - Jacketed or  
screened and jacketed - Part 002: General**

Série aérospatiale - Câbles, électriques, d'usage général,  
mono et multiconducteurs - Famille XLETFE - Gainés ou  
blindés et gainés - Partie 002: Généralités

Luft- und Raumfahrt - Ein- und mehradrige elektrische  
Leitungen für allgemeine Verwendung - XLETFE Familie -  
Mit Mantel oder geschirmt und Mantel - Teil 002:  
Allgemeines

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**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 4612-002:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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## 1 Scope

This European Standard specifies the list of product standards and common characteristics of electrical cables for use in the on-board electrical systems of aircraft operating at temperatures between – 65 °C and 150 °C, operating at voltages not exceeding 600 V r.m.s and frequencies not exceeding 2 000 Hz (unless otherwise specified in product standards).

## 2 Normative references

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

EN 2084, *Aerospace series — Cables, electric, single-core, general purpose, with conductors in copper or copper alloy — Technical specification*

EN 2235, *Aerospace series — Single and multicore electrical cables, screened and jacketed*

EN 3475-100, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General*

EN 3838, *Aerospace series — Requirements and tests on user-applied markings on aircraft electrical cables*

EN 4434, *Aerospace series — Copper or copper alloy lightweight conductors for electrical cables — Product standard (Normal and tight tolerances)*

FED-STD-595B, *Colors used in government procurement*<sup>1)</sup>

TR 6058, *Aerospace series — Cable code identification list*<sup>2)</sup>

## 3 Terms, definitions and symbols

For the purposes of this document, the terms, definitions and symbols given in EN 3475-100 apply.

## 4 List of product standards

EN 4612-003, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 003: Tin plated copper — Operating temperatures, between – 65 °C and 135 °C — Single extruded wall for open applications, with jacket without screen — UV laser printable — Product standard*

EN 4612-004, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 004: Tin plated copper — Operating temperatures, between – 65 °C and 135 °C — Single extruded wall for open applications, with jacket and screen (braid) — UV laser printable — Product standard*

EN 4612-005, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 005: Tin plated copper — Operating temperatures, between – 65 °C and 135 °C — Dual extruded wall for open applications, with jacket without screen — UV laser printable — Product standard*

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1) Published by: DoD National (US) Mil. Department of Defense <http://www.defenselink.mil/>.

2) Published as ASD-STAN Technical Report at the date of publication of this standard ([www.asd-stan.org](http://www.asd-stan.org)).

EN 4612-006, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 006: Tin plated copper — Operating temperatures, between – 65 °C and 135 °C — Dual extruded wall for open applications, with jacket and screen (braid) — UV laser printable — Product standard*

EN 4612-007, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 007: Silver plated copper — Operating temperatures, between – 65 °C and 150 °C — Single extruded wall for open applications, with jacket without screen — UV laser printable — Product standard*

EN 4612-008, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 008: Silver plated copper — Operating temperatures, between – 65 °C and 150 °C — Single extruded wall for open applications, with jacket and screen (braid) — UV laser printable — Product standard*

EN 4612-009, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 009: Silver plated copper — Operating temperatures, between – 65 °C and 150 °C — Dual extruded wall for open applications, with jacket without screen — UV laser printable — Product standard*

EN 4612-010, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 010: Silver plated copper — Operating temperatures, between – 65 °C and 150 °C — Dual extruded wall for open applications, with jacket and screen (braid) — UV laser printable — Product standard*

EN 4612-011, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 011: Nickel plated copper — Operating temperatures, between – 65 °C and 150 °C — Dual extruded wall for open applications, with jacket without screen — UV laser printable — Product standard*

EN 4612-012, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 012: Nickel plated copper — Operating temperatures, between – 65 °C and 150 °C — Dual extruded wall for open applications, with jacket and screen (braid) — UV laser printable — Product standard*

EN 4612-013, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — jacketed or screened and jacketed — Part 013: SX, TC and UC — Nickel plated copper — Operating temperatures, between – 65 °C and 150 °C — Single extruded wall for equipment only, with jacket and screen (spiral) — UV laser printable — Product standard*

## **5 Materials and construction**

### **5.1 Materials**

The cable conductors shall be made of copper or copper alloy and nickel or silver or tin-plated conforming to EN 4434 Table 2 – conductor, electric cable, lightweight, in copper or copper alloy or as specified in the product standards.

### **5.2 Construction**

#### **5.2.1 General**

See individual product standards.

**5.2.2 Number of cores**

See Table 1.

**Table 1**

<b>Number of cores</b>	1	2	3	4	5	6	7	8	9	10
<b>Code</b>	A	B	C	D	E	F	G	H	J	K

**5.2.3 Colour coding of single core cables**

Unless specified by the purchaser coding shall be as follows:

See Table 2.

**Table 2 — Colour code**

<b>Code</b>	<b>Colour <sup>a</sup></b>
A	Red (2)
B	Blue (6)
C	Yellow (4)
D	Green (5)
E	White (9)
F	Black (0)
G	Brown (1)
H	Orange (3)
J	Violet (7)
K	Grey (8)
L	Light Red (2L)
M	Not allocated
N	Not allocated
P	See Table 3.
Q	See Table 3.
R	See Table 3.
S	See Table 3.
T	Not allocated
U	Not allocated
V	Not allocated
W	Not allocated

<sup>a</sup> For information: international colour code



Unless otherwise specified in the product standard or contract when UV markable red is specified as the cable outer insulation or jacket then light red (2L) shall be used. Light red shall be a good match to Munsell 2.5R 6.9 to 7.4 or Federal Standard 595B - 31638 to 31668 or RAL 3015.

#### 5.2.4 Colour coding of unscreened, multicore cables

Unless specified by the purchaser coding shall be as follows:

See Table 3.

**Table 3**

Number of cores in cables	Colours										
01	Red										
02	Red	Blue									
03	Red	Blue	Yellow								
04	Red	Blue	Yellow	Green							
05	Red	Blue	Yellow	Green	White						
06	Red	Blue	Yellow	Green	White	Black					
07	Red	Blue	Yellow	Green	White	Black	Brown				
08	Red	Blue	Yellow	Green	White	Black	Brown	Orange			
09	Red	Blue	Yellow	Green	White	Black	Brown	Orange	Purple		
10	Red	Blue	Yellow	Green	White	Black	Brown	Orange	Purple	Grey	
NOTE Jacket colour should be white unless specified differently by the purchaser.											

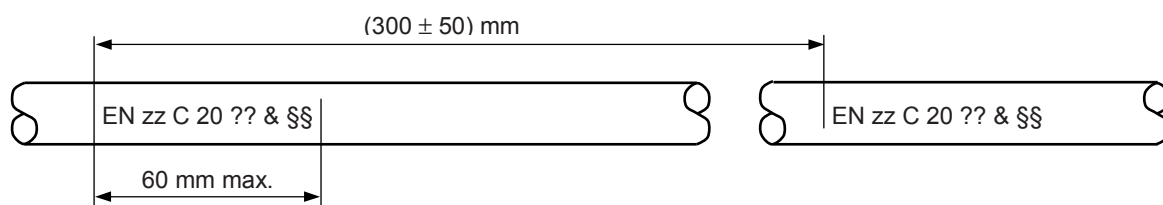
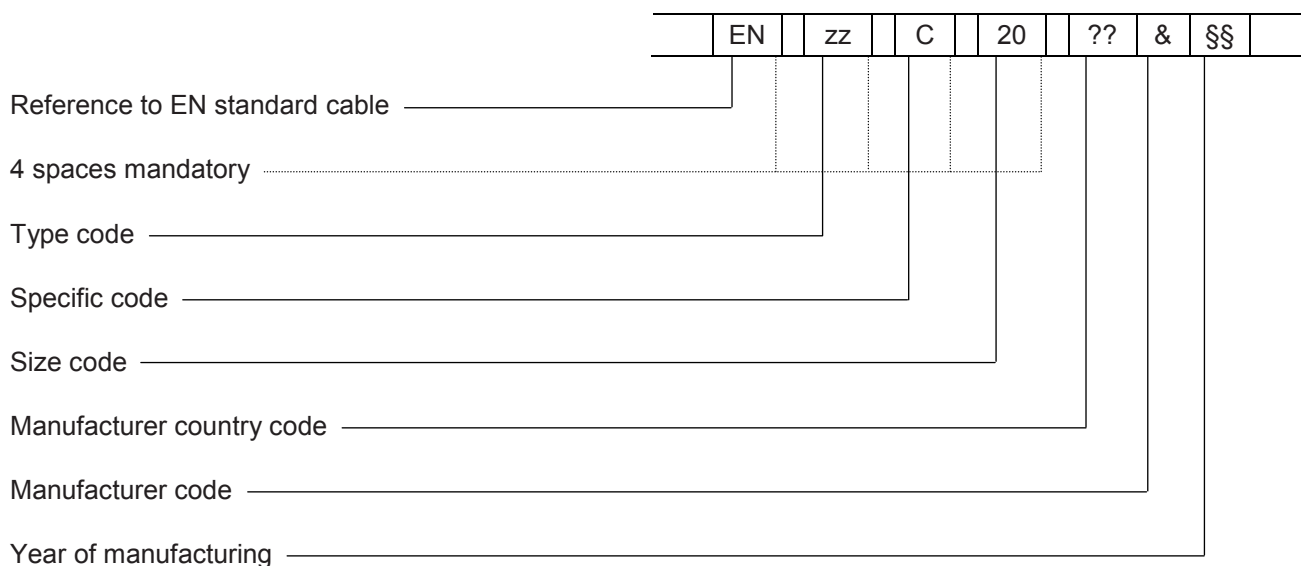
## 6 Identification and marking

The identification and marking of cables by the manufacturer shall be in accordance with EN 2084.

As the designation, required for orders, is generally too long, for use in electrical drawings a shorter designation (without colour information) is given in TR 6058 plus the corresponding AWG.

EXAMPLE Designation: EN 4612-004A006P  
 Cross reference: XLETFE 20

This shorter designation is used for identification and marking as in the following example:



**Figure 1**

For multicore cable with jacket, the marking shall be optional on core(s) and mandatory on jacket.

For multicore cable without jacket, each core shall be marked with his own designation.

The cables (single core or jacketed cable) shall be capable of being printed with user-applied UV laser markings according to EN 3838. Aggressive marking techniques are not permitted.

## 7 Technical specification

See EN 2084 and EN 2235.



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