
Aeronavtika - Kabelske spojke za vezalno pasovje - 003. del: Plastične vezice - Delovne temperature med -65 °C do 105 °C in -65 °C do 150 °C - Standard za proizvod

Aerospace series - Cable ties for harnesses - Part 003: Plastic cable ties - Operating temperatures -65 °C to 105 °C and -65 °C to 150 °C - Product standard

Luft- und Raumfahrt - Befestigungsbänder für Leitungsbündel - Teil 003: Befestigungsbänder aus Kunststoff - Betriebstemperatur -65 °C bis 105 °C und -65 °C bis 150 °C - Produktnorm

Série aérospatiale - Frettes de câblage pour harnais - Partie 003: Frettes en plastique - Températures d'utilisation -65 °C à 105 °C et -65 °C à 150 °C - Norme de produit

Ta slovenski standard je istoveten z: EN 4056-003:2016

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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SIST EN 4056-003:2016

en,fr,de

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EUROPEAN STANDARD

EN 4056-003

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2016

ICS 49.060

English Version

**Aerospace series - Cable ties for harnesses - Part 003:
Plastic cable ties - Operating temperatures -65 °C to 105 °C
and -65 °C to 150 °C - Product standard**

Série aérospatiale - Frettes de câblage pour harnais -
Partie 003: Frettes en plastique - Températures
d'utilisation -65 °C à 105 °C et -65 °C à 150 °C - Norme
de produit

Luft- und Raumfahrt - Befestigungsbänder für
Leitungsbündel - Teil 003: Kabelbinder aus Kunststoff -
Betriebstemperatur -65 °C bis 105 °C und -65 °C bis
150 °C - Produktnorm

This European Standard was approved by CEN on 2 January 2016.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 4056-003:2016) 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 March 2017, and conflicting national standards shall be withdrawn at the latest by March 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 4056-003:2016 (E)**1 Scope**

This European Standard defines the required characteristics of cable ties with either internal or external serrations manufactured entirely from plastics material, for installation under controlled tension on aircraft cable harnesses.

It shall be used together with EN 4056-001.

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 2825, *Aerospace series — Burning behaviour of non metallic materials under the influence of radiating heat and flames — Determination of smoke density*

EN 2826, *Aerospace series — Burning behaviour of non metallic materials under the influence of radiating heat and flames — Determination of gas components in the smoke*

EN 4056-001, *Aerospace series — Cable ties for harnesses — Part 001: Technical specification*

EN 4057 (all parts), *Aerospace series — Cable ties for harnesses — Test methods*

MS 90387, *Tool, hand, adjustable for plastic and metal tie down straps*¹⁾

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 4056-001 apply.

4 Required characteristics**4.1 Dimensions**

See Figure 1 and Table 1.

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

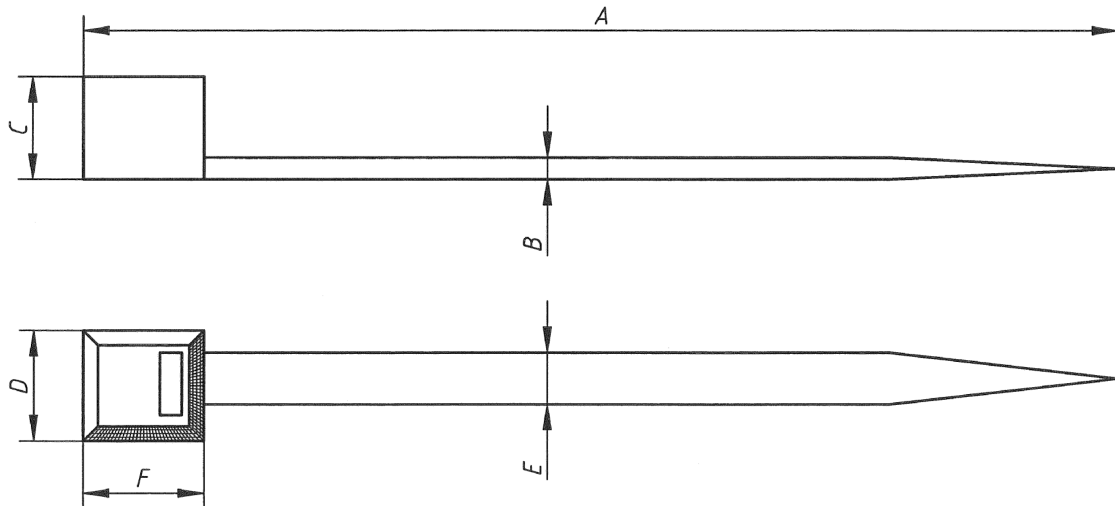


Figure 1 — Cable tie

Table 1 — Dimensions and mass

Size code	Recommended bundle diameter		Length of tie	Thickness of strap	Width of strap		Head dimensions			Loop tensile strength	Mass of 10 ties related to minimum length
							Length	Width	Height		
							F	D	C		
	mm		mm	mm	mm	mm	mm	mm	N	g	
	min.	max.	min.	max.	min.	max.	max.	max.	min.	max.	
P	1,6	20	92	1,1	2,3	2,5	4,3	5,0	4,0	80	3,0
R	1,6	50	190	1,3	3,3	3,8	6,3	6,6	5,0	120	9,5
S	1,6	80	280	1,3	3,3	3,8	6,3	6,6	5,0	120	17,0
T	1,6	80	280	1,3	4,4	4,8	6,7	8,6	6,0	220	21,0
U	5,0	100	335	1,9	6,6	7,1	9,4	13,5	8,3	530	65,0
V	1,6	110	360	1,3	4,4	4,8	6,7	8,5	6,0	220	24,5
W ^a	5,0	230	700	1,9	7,6	8,9	9,4	13,5	8,3	400	94
X ^a	5,0	130	456	1,9	7,4	7,8	9,4	13,5	8,3	530	86

^a Based on NSA 835401.

4.2 Material

4.2.1 Temperature rating (type)

The ties shall be capable of use within the following temperature ranges:

- Type 1: – 65 °C to 105 °C, 135 °C;
- Type 2: – 65 °C to 150 °C.

4.2.2 Flammability class

Available as class 1 and class 2.

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See Table 3 for requirements.

4.2.3 Colour

See Table 2 of EN 4056-001.

4.2.4 Burning behaviour

Materials for cable tie shall satisfy the following requirements when tested to EN 2825 and EN 2826.

4.2.4.1 Smoke density

The maximum specific optical smoke density (average) shall not exceed:

- $D_m = 200$ (flaming mode);
- $D_m = 150$ (non flaming mode).

4.2.4.2 Toxicity

The average concentration in parts per million (ppm) of the following gas components shall not exceed the following limits after a test duration of 4 min.

Gas component	Limit of concentration ppm
Hydrogen Fluoride HF	100
Hydrogen Chloride HCl	150
Hydrogen Cyanide HCN	150
Sulphur Dioxide SO ₂	100
Hydrogen Sulphide H ₂ S	100
Nitrous Gases NO/NO ₂	100
Carbon Monoxide CO	1.000

4.3 U.V. resistance

U.V. resistant cable ties shall meet the requirements of EN 4057-307, given in Table 3.

4.4 Application tool

Cable ties shall be applied using a tensioning tool as specified in MS 90387, verified in accordance with EN 4057-407 ensuring that the application force does not exceed the values shown in Table 2.

Table 2 — Maximum recommended application force

Size code	N
P	60
R	100
S	150
T	300
U	150
V	300
W	320
X	300

5 Tests and requirements

See Table 3 and EN 4056-001.

Table 3 — Tests

EN 4057-	Designation of the test	Requirement
201	Visual examination	There shall be no sharp or abrasive edges.
202	Examination of mass and dimensions	The mass and dimensions shall be in accordance with Table 1 of this European Standard.
301	Salt mist test	Not applicable
302	Flammability	After removal of the burner from the specimen, any flame shall extinguish within 5 s. If there are no flaming droplets (or particles) during the test, and the flame extinguishes within 5 s, the specimen will be classified as Class 1. If there are flaming droplets (or particles) but all the flames extinguish within 5 s, the specimen will be classified as class 2.
303	Resistance to fluids	All the specimens shall meet the minimum loop tensile strength as stated in Table 1 of this European Standard.
304	Loop tensile strength at maximum working temperature	All specimens shall meet at least 60 % of the minimum loop tensile strength as stated in Table 1 of this European Standard.
305	Colour fastness (applicable only to coloured ties)	The colour fastness of the specimen shall not be less than wool standard number 6.
306	Heat ageing test	The tensile strength shall not be lower than that specified in the appropriate product standard. The elongation at break of the aged, flat samples shall be not less than 75 % of the elongation at break of the unaged flat samples as defined in the product standard.
307	Resistance to ultra violet radiation	All the specimens shall meet at least 95 % of requirement for EN 4057-401. The average elongation at break shall be not less than 60 % of that of the unexposed standard.
401	Loop tensile strength	All the specimens shall meet the minimum loop tensile strength as stated in Table 1 of this European Standard.
402	Life cycle	After the vibration test: There shall be no damage to the cable insulation when viewed with a 10 times magnification aid. The specimens shall be examined for cracks, breaking and/or release of the locking device during removal from the vibration test harness. All specimens shall meet the minimum loop tensile strength as stated in Table 1 of this European Standard.
404	Low temperature installation	All the specimens shall meet the minimum loop tensile strength as stated in Table 1 of this European Standard.
405	Compass safe distance	Not applicable
406	Locking device retention (ties containing metal locking barbs only).	Not applicable
407	Verification of application tool settings	See Table 2 ($\pm 5\%$).