

European Technical Assessment

**ETA-22/0850
of 14/12/2022**

English translation prepared by CSTB - Original version in French language

General Part

Trade name of the construction
product:

Cheville Longue Universelle Nylon OLERON

Product family to which the
construction product belongs :

**Plastic anchor for multiple use in concrete and masonry for
non-structural applications**

Manufacturer:

Legallais
7 rue d'Atalante
14 200 Hérouville-Saint-Clair
France

Manufacturing plant(s):

Plant 1

This European Technical
Assessment contains:

12 pages including 9 pages of annexes which form an
integral part of this assessment

This European Technical
Assessment is issued in
accordance with Regulation (EU)
No 305/2011, on the basis of:

EAD 330284-00-0604 (June 2018): Plastic anchors for
redundant non-structural systems in concrete and masonry

This Assessment replaces:

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Specific Part

1 Technical description of the product

The Cheville Longue Universelle Nylon OLERON is an anchor consisting of a special screw and a polymeric sleeve which passes through the fixture. The special screw is made of galvanized steel or stainless steel, whereas the sleeve consists of polyamide PA6. The polymeric sleeve is expanded by screwing in the expansion element which presses the sleeve against the wall of the drilled hole.

The installed anchor is shown in Annex A.

2 Specification of the intended use

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes B.

The plastic anchor "OLERON" is intended for anchorages subject to static and quasi-static loading. The applicable base material groups are "a" and "b".

The verifications and assessment methods on which this European Technical Assessment is based on lead to the assumption of a working life of the plastic anchor "OLERON" for the intended use of 50 years when installed in the works provided that the plastic anchor is subject to appropriate installation.

The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Resistance to steel failure under tension loading	See Annex C1
Resistance to steel or polymer failure under shear loading	See Annex C1
Characteristic Resistance of the plastic expansion sleeve in concrete	See Annex C1
Characteristic Resistance of the plastic expansion sleeve in masonry	See Annex C2
Displacements under short-term and long-term loading	See Annex C3
Edge distance and spacing	See Annex B2, B3

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C1

3.3 Other essential characteristics

Essential characteristic	Performance
Durability	Corrosion of Metal parts
	High alkalinity of plastic sleeve
	for screws see Annex A3 and Annex B1
	No influence of high alkalinity

4 Assessment and verification of constancy of performance (AVCP)

According to the Decision 97/463/EC of the European Commission¹, as amended, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or Class	System
Plastic anchor for use in concrete and masonry	Plastic anchor for multiple use in concrete and masonry for non-structural applications	—	2+

5 Technical details necessary for the implementation of the AVCP system

Technical details necessary for the implementation of the Assessment and Verification of Constancy of Performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchors for issuing the certificate of conformity CE based on the control plan.

Issued in Marne La Vallée on 14/12/2022 by

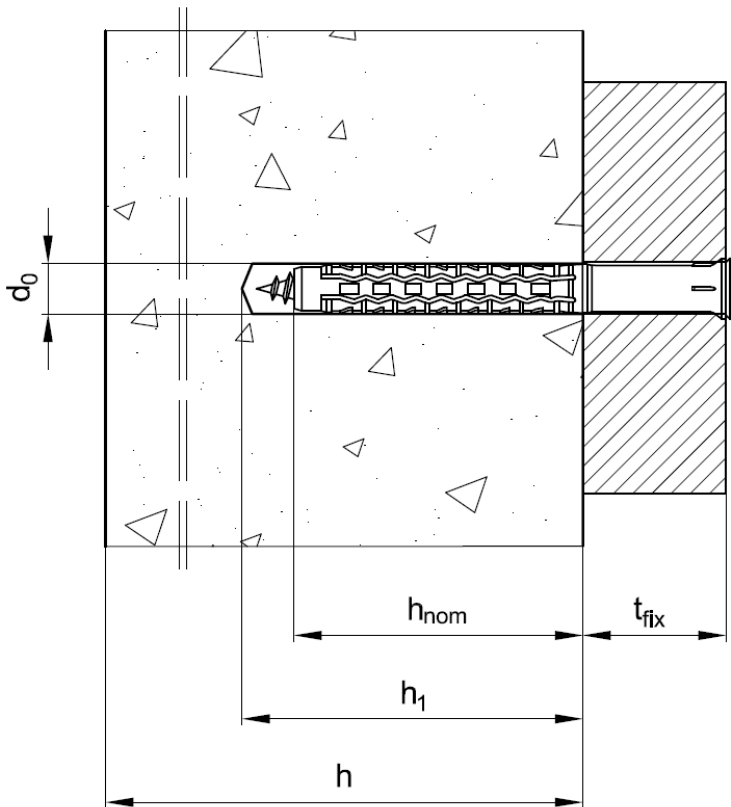
The original French version is signed

La cheffe de division, Anca CRONOPOL

¹

Official Journal of the European Communities L 254 of 08.10.1996

Installed condition

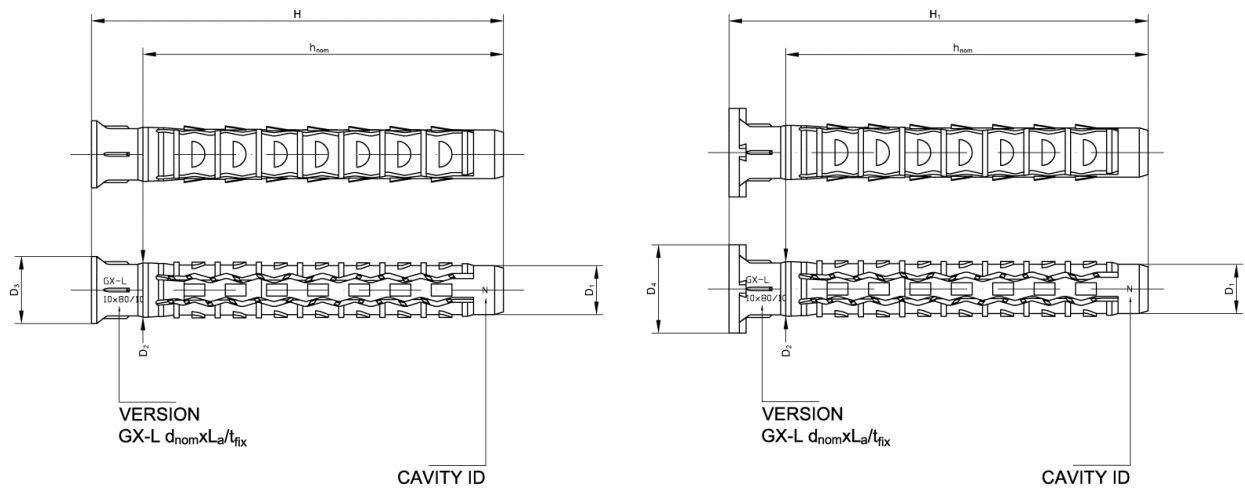


- Legend:**
- d_0 = drill hole diameter
 - h_{nom} = overall plastic anchor embedment depth in the base material
 - h_1 = depth of the drilled hole to deepest point
 - h = thickness of member
 - t_{fix} = thickness of the fixture

Cheville Longue Universelle Nylon OLERON	Annex A1
Product description Installed condition	

Product description

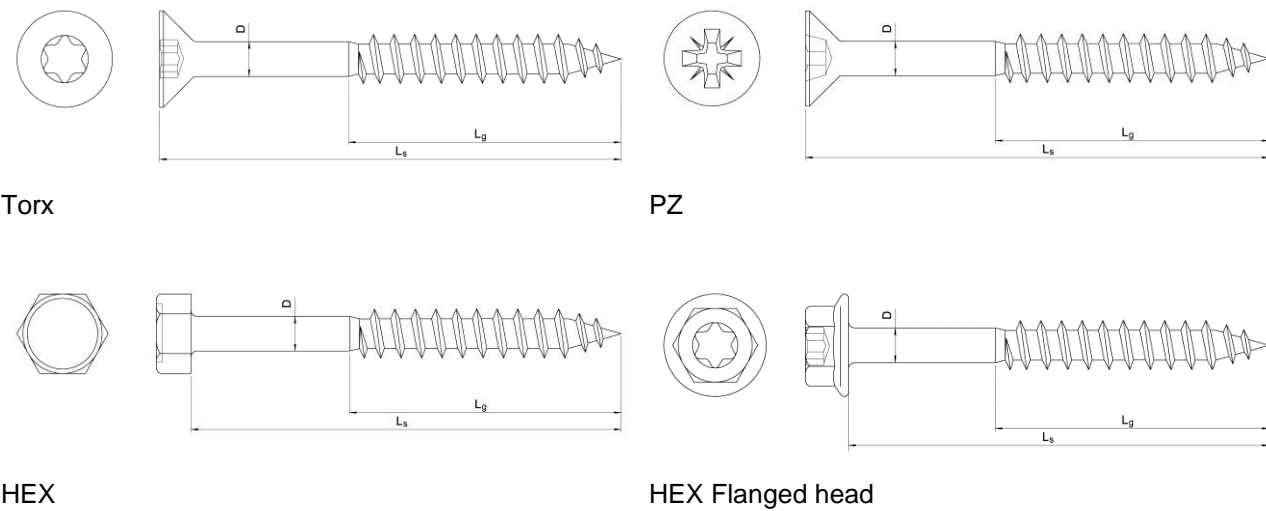
Figure A1: Expansion sleeve of OLERON anchor



Version without collar for size $\phi 8$ and $\phi 10$

Version with collar for size $\phi 10$ only

Figure A2: Special screws



Cheville Longue Universelle Nylon OLERON

Product description

Expansion sleeve, marking and special screws

Annex A2

Table A1 : Materials

Designation	Material
Plastic sleeve	Polyamide PA6, Light grey
Special screw	Carbon steel, Grade 5.8, Galvanized acc. ISO 4042 Carbon steel, Grade 5.8, Hot dip galvanized acc. ISO 10684 Stainless steel AISI 316; 1.4401

Table A2: Dimensions

Anchor type	Plastic sleeve								Screw						
	d _{nom}	h _{nom}	D ₁	D ₂	D ₃	D ₄	t _{fix,max}	H	D	L _s	L _g	Torx	PZ	HEX	HEX Torx Flanged
8x80/10	8	70	7,8	8,5	10,5	-	10	80	5,5	85	55	x	x	x	-
8x100/30							30	100		105		x	x	x	-
8x120/50							50	120		125		x	x	x	-
8x140/70							70	140		145		x	x	x	-
8x170/100							100	170		175		x	x	x	-
8x200/130							130	200		205		x	x	x	-
10x80/10	10	70	9,5	10,5	13,0	17,0	10	80	7,0	85	58-85	x	x	x	x
10x100/30							30	100		105	63-85	x	x	x	x
10x120/50							50	120		125	63-85	x	x	x	x
10x140/70							70	140		145	63-85	x	x	x	x
10x160/90							90	160		165	63-85	x	x	x	x
10x200/130							130	200		205	63-85	x	x	x	x
10x240/170							170	240		245	80-85	x	x	x	x
10x260/190							190	260		260	80-85	x	x	x	x

Cheville Longue Universelle Nylon OLERON

Product description

Dimensions, Materials, Installation parameters

Annex A3

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads,
- Multiple fastening for non-structural applications.

Base materials:

- Use category « a » : Reinforced or unreinforced normal weight concrete, cracked or non-cracked, with strength class \geq C12/15, according to EN 206, see Annex C1;
- Solid brick masonry, base material group “b”, as per EN 771-1 or EN 771-2, see Annex C2;
- Hollow or perforated masonry, base material group “c”, as per EN 771-1 or EN 771-2, see Annex C2;
- Mortar strength class of the masonry \geq M 2,5 according to EN 998-2.
- For other comparable base materials of the base material group “a”, “b” or “c”, the characteristic resistance of the anchor may be determined by job site tests in accordance with TR 051.

Temperature range:

- a : -20 °C to + 40°C (max. short term temperature +40°C et max. long term temperature +24°C)

Use conditions (Environmental conditions):

- Structure subject to dry internal conditions: screw made of zinc coated steel or stainless steel.
- Structures subject to external atmospheric exposure (including industrial and marine environments) if no particular aggressive conditions [e.g. permanent, alternating immersion in seawater or the splash zone of sea water, chloride atmosphere of indoor swimming pools or atmosphere with extrem chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing material are used)] exist (stainless steel).

Design:

- The anchorages are designed in accordance with TR 064 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural application in accordance with TR 064.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings prepared for that purpose and using the appropriate tools.
- Checks before placing the anchor to ensure that the characteristic values of the base material in which the anchor is to be placed are identical to the values to which the characteristic loads apply;
- Observation of the drilling method using rotary drilling or hammer / impact drilling as given in Annex C2 (drill bits acc. to ISO 5468).
- Placing drilled holes without damaging the reinforcement and holes must be cleaned of drilling dust;
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar.
- The plastic sleeve is inserted through the fixture by slight hammer blows and the special screw is screwed in until the head of the screw touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move is impossible after the complete turn-in of the screw.
- Temperature during the installation of the anchor \geq 0°C;
- Protection to UV exposure due to solar radiation of the anchor not protected.

Cheville Longue Universelle Nylon OLERON

Intended Use
Specifications

Annex B1

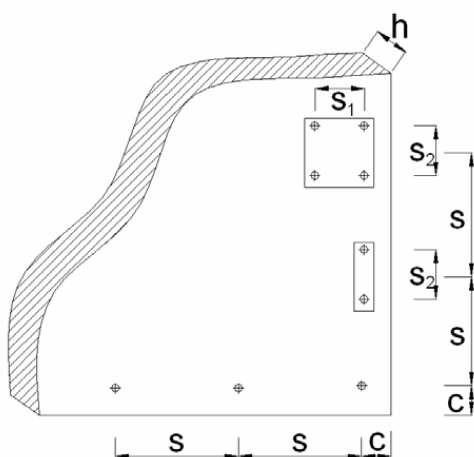
Table 3: Installation Parameters

Denomination			OLERON 8	OLERON 10
Drill hole diameter	d_0	= [mm]	8	10
Cutting diameter of drill bit	d_{cut}	= [mm]	[8,25 – 8,45]	[10,25 – 10,45]
Depth of drill hole to deepest point	h_1	≥ [mm]	80	80
Plastic anchor embedment depth in the base material	h_{nom}	≥ [mm]	70	70
Diameter of the clearance hole in the fixture	d_f	≤ [mm]	8,5	10,5

Table 4: Minimum thickness of member, edge distance and anchor spacing in concrete

Anchor size	Concrete	h_{min}	$C_{cr,N}$	C_{min}	S_{min}
		[mm]	[mm]	[mm]	[mm]
OLERON 8	Concrete C12/15	100	100	70	70
	Concrete ≥ C16/20	100	70	50	50
OLERON 10	Concrete C12/15	100	140	70	85
	Concrete ≥ C16/20	100	100	50	60

Scheme of distance and spacing



Cheville Longue Universelle Nylon OLERON

Installation parameters (concrete and masonry)
Minimum member thickness, edge distance and spacing in concrete

Annex B2

Table B1: Minimum thickness of member, edge distance and anchor spacing in masonry for OLERON 8 and OLERON 10

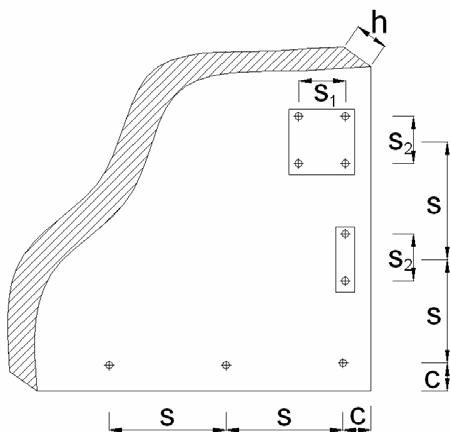
Base material	Minimum thickness of member h_{min} [mm]	Edge distance c_{min} [mm]	Spacing		
			Single anchor s_{min} [mm]	Anchor group Perpendicular to free edge $s_{1,min}$ [mm]	Parallel to free edge $s_{2,min}$ [mm]
Solid clay brick, EN 771-1	115	100	250	200	400
Solid sand-lime brick, EN 771-2	115	100	250	200	400
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	115	100	250	200	400
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	200	100	250	200	400
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	115	100	250	200	400
Sand-lime perforated brick, KSL-R 8DF or DIN 106 / EN 771-2	240	100	250	200	400

¹⁾ Information for base material masonry: see Annex C2 , Table 9.

²⁾ The design method is valid for single anchors and anchor groups with two or four anchors.

³⁾ For edge distance $c \geq 200$ mm in hollow or perforated masonry (use category "c") the values for spacing only may be reduced to $s_{1,min} = s_{2,min} = 100$ mm, , if the characteristic resistance for an anchor group F_{Rk} according to Table 9 of Annex C2 is reduced with the factor 0,5. Intermediate values by linear interpolation.

Scheme of distances and spacing



Cheville Longue Universelle Nylon OLERON

Minimum thickness, edge distances and spacings in masonry

Annex B3

Table C1: Characteristic steel resistance of the screw in concrete and masonry

Designation			Galvanized steel		Stainless steel	
			OLERON 8	OLERON 10	OLERON 8	OLERON 10
Screw diameter	d_s	[mm]	5,5	7,0	5,5	7,0
Characteristic tension resistance	$N_{Rk,s}$	[kN]	9,6	12,8	6,0	12,3
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,50	1,49	2,86	2,86
Characteristic shear resistance	$V_{Rk,s}$	[kN]	4,8	6,4	3,0	6,2
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,50	2,38	2,38
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	5,6	10,7	3,5	10,3
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,50	2,38	2,38

¹⁾ In absence of other national regulations

Table C2: Characteristic resistance due to pull-out failure in concrete

Pull-out failure			OLERON 8	OLERON 10
Characteristic resistance, concrete \geq C16/20	$N_{Rk,p}$	[kN]	2,0	3,0
Characteristic resistance, concrete C12/15	$N_{Rk,p}$	[kN]	1,2	2,0
Partial safety factor	$\gamma_{Mc}^{1)}$	[-]	1,8	1,8

¹⁾ In absence of other national regulations




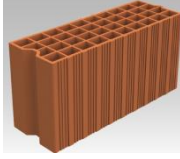


For fastening of façade systems the load bearing behaviour of the OLERON 10, $F_{Rk,fi,90}$ [kN] = 0,8kN (no permanent centric tension load, shear load without lever arm) can be assumed.

Cheville Longue Universelle Nylon OLERON

Characteristic resistance in concrete

Annex C1

Table C3: Characteristic resistance in masonry

Base material	Picture / Measures [mm]	Drill method ¹⁾	Density class [kg/dm ³]	Compressive strength class [N/mm ²]	F _{rk} ²⁾ [kN]	
					OLERON 8	OLERON 10
Solid clay brick, EN 771-1	 247x118x73	H	>2,1	f _b ≥ 75 ³⁾	3,5	4,0
				f _b ≥ 20 ³⁾	1,5	1,2
Solid sand-lime brick, EN 771-2	 240x114x71	H	>1,9	f _b ≥ 30 ³⁾	1,5	2,5
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	 120x250x120	H	>0,91	15	0,5	0,75
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	 560x200x274	R	>0,60	7,5	0,3	0,5
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	 240x115x113	H	>0,90	12	0,5	0,9
Sand-lime perforated brick, KSL-R 8DF DIN 106 / EN 771-2	 250x240x238	H	>1,3	15	0,5	1,2
Partial safety factor	γ _{Mm} ⁴⁾	2,5				

¹⁾ H= Hammer drilling; R= Rotary drilling

²⁾ Characteristic resistance F_{rk} for tension, shear or combined tension and shear loading.

The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table B3, Annex B3.

³⁾ f_b = minimum mean compressive strength.

⁴⁾ In absence of other national regulations.

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Annex C2

Characteristic resistance in masonry

Table C4: Displacement under tension / shear loading in concrete

Anchor size	Tension load			Shear load		
	F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]
OLERON 8	0,79	0,46	0,21	1,14	0,74	1,11
OLERON 10	1,19	0,35	0,47	1,71	1,57	2,35

Table C5: Displacements under tension / shear loading in masonry

Base material ¹⁾	Displacement									
	OLERON 8					OLERON 10				
	F [kN]	Tension δ_{N0} $\delta_{N\infty}$		Shear δ_{V0} $\delta_{V\infty}$		F [kN]	Tension δ_{N0} $\delta_{N\infty}$		Shear δ_{V0} $\delta_{V\infty}$	
Solid clay brick, EN 771-1	1,00	0,20	0,40	0,83	1,25	1,14	0,39	0,78	0,95	1,43
Solid sand-lime brick, EN 771-2	0,43	0,17	0,34	0,35	0,54	0,71	0,13	0,26	0,59	0,88
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	0,14	0,15	0,30	0,12	0,18	0,21	0,11	0,22	0,18	0,27
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	0,09	0,09	0,18	0,07	0,11	0,14	0,10	0,20	0,12	0,18
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	0,14	0,10	0,20	0,12	0,18	0,26	0,27	0,54	0,22	0,33
Sand-lime perforated brick, KSL-R 8DF DIN 106 / EN 771-2	0,14	0,13	0,26	0,12	0,18	0,34	0,15	0,30	0,29	0,43

¹⁾ Information for masonry base material : see Annex C2, Table C3

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Displacements in concrete and masonry

Annex C3