

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-18/0428**  
**of 28 June 2018**

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Sormat Universal Frame Plug SDF 8V

Product family  
to which the construction product belongs

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

Manufacturer

Sormat Oy  
Harjutie 5  
21290 RUSKO  
FINNLAND

Manufacturing plant

Sormat Plant 9

This European Technical Assessment  
contains

12 pages including 3 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

ETAG 020, March 2012,  
used as EAD according to Article 66 Paragraph 3 of  
Regulation (EU) No 305/2011.

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

## Specific Part

### 1 Technical description of the product

The Sormat Universal Frame Plug SDF 8V is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel or of stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

The product description is given in Annex A.

### 2 Specification of the intended use in accordance with the applicable European Assessment Document

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

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 50 years. 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 and references to the methods used for its assessment

#### 3.1 Mechanical resistance and stability (BWR 1)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

#### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A 1
Resistance to fire	No performance assessed

#### 3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

#### 3.4 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annex C 1
Characteristic resistance for bending moments	See Annex C 1
Displacements under shear and tension loads	See Annex C 1
Anchor distances and dimensions of members	See Annex B 2, B 3

English translation prepared by DIBt

**4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base**

In accordance with guideline for European technical approval ETAG 020, March 2012 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: 97/463/EC.

The system to be applied is: 2+

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

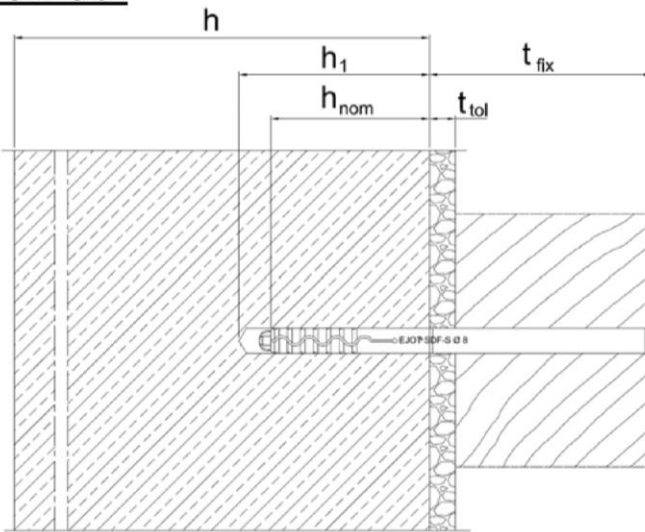
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 10 July 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow  
Head of Department

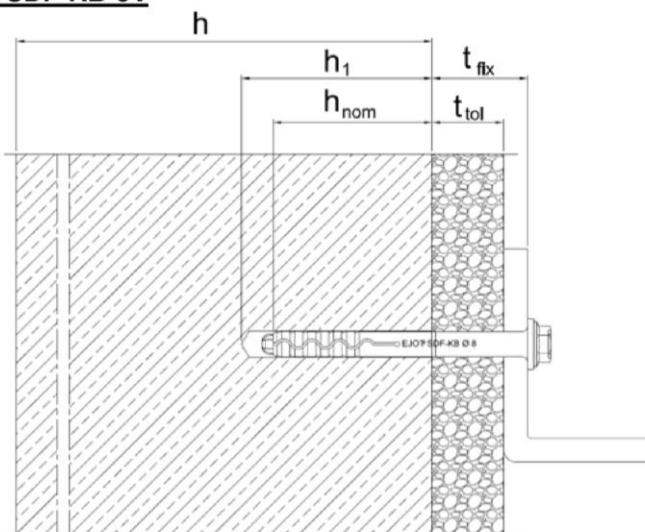
*beglaubigt:*  
Aksünger

**Sormat SDF-S-8V**



Intended use: screw head type: countersunk (S)

**Sormat SDF-KB-8V**



Intended use: screw head type: hexagon head with collar (KB)

**Legend**

- $h$  = Thickness of member
- $h_1$  = Depth of drilled hole to deepest point
- $h_{nom}$  = Overall plastic anchor embedment depth in base material
- $t_{tol}$  = Thickness of equalizing layer or non-load bearing coating
- $t_{fix}$  =  $t_{tol}$  + Thickness of fixture

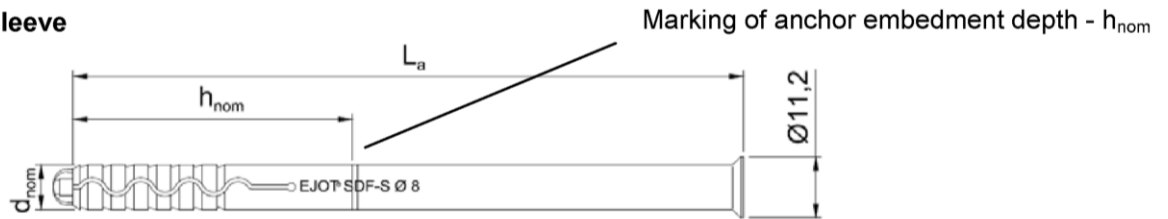
**Sormat SDF-8V**

**Product description**  
Installed anchor

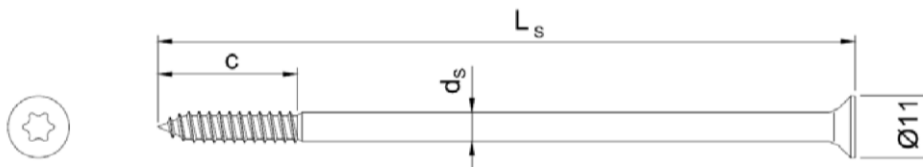
**Annex A 1**

**Type of anchor: countersunk (S): Sormat SDF-S-8V**

**Anchor sleeve**



**Special screw**



**Anchor marking:**

Manufacturer, anchor type incl. Head type, diameter, length (at the anchor tip)

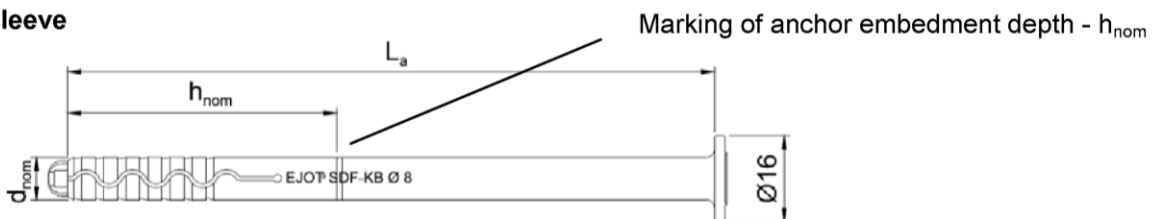
Example: Sormat SDF-S-8 x 100

**Screw marking:**

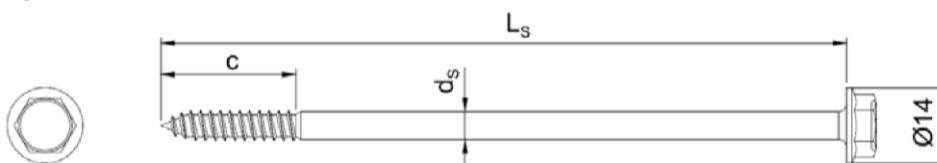
Length of anchor (e.g. 100)

**Type of anchor: collar with flange (KB): Sormat SDF-KB-8V**

**Anchor sleeve**



**Special screw**



**Anchor marking:**

Manufacturer, anchor type incl. Head type, diameter, length (at the anchor tip)

Example: Sormat SDF-KB-8 x 100

**Screw marking:**

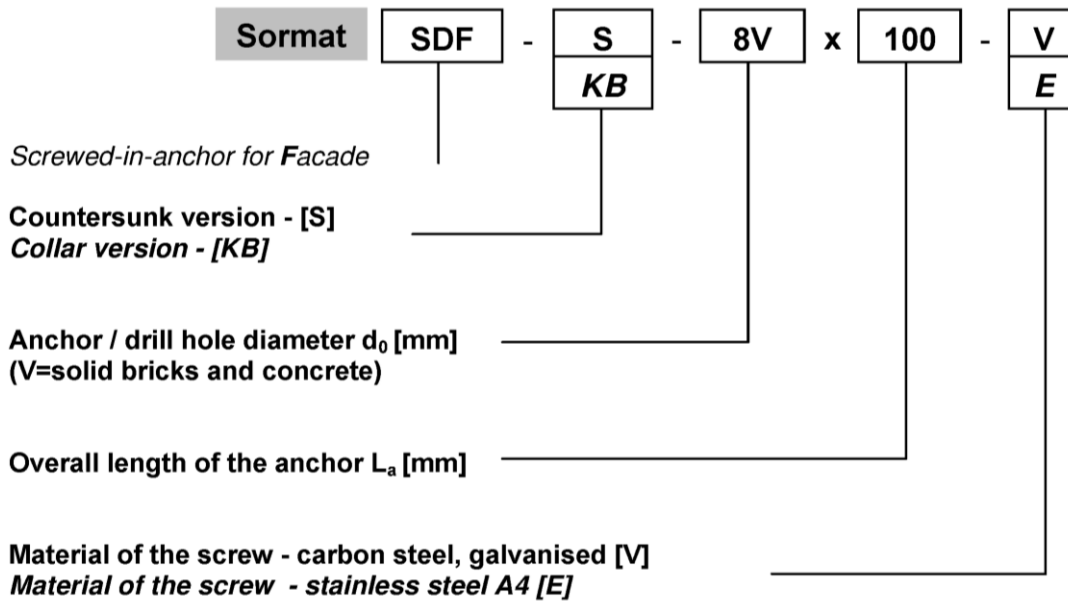
Length of anchor (e.g. 100)

**Sormat SDF-8V**

**Annex A 2**

**Product description**  
Anchor types / specific screw

**Example of product identification**



**Table A1: Dimensions [mm]**

Anchor type	Anchor sleeve					Specific screw		
	colour	$d_{nom}$	$h_{nom}$	min $L_a$	max $L_a$	$L_s$	$d_s$	c
<b>SDF – S – 8V</b>	red	8	50	60	220	$L_a + 8,0$	5,2	25
<b>SDF – KB – 8V</b>	rot	8	50	60	220	$L_a + 8,0$	5,2	25

Designations: Annex A 2

**Table A2: Materials**

Element	Material
<b>Anchor sleeve</b>	Polyamid PA6, colour red
<b>Special screw</b>	Steel, galvanized zinc plated > 5 $\mu\text{m}$ acc. EN ISO 4042:2001-01 strength class 5.8
	Stainless steel acc. EN 10088-3:2012, z.B. 1.4401 / 1.4571 Strength class $\geq$ A4-50

**Sormat SDF-8V**

**Product description**  
Product identification  
Dimensions, materials

**Annex A 3**

**Specifications of intended use**

**Anchorage subject to:**

- Static and quasi-static loads.
- Multiple fixing of non-structural applications

**Base materials:**

- Reinforced or unreinforced normal weight concrete with strength classes  $\geq$  C12/15 (use category a), according to EN 206-1:2000-Annex C1.
- Solid brick masonry (use category b), according to Annex C2.  
Note: The characteristic resistance is also valid for larger brick sizes and larger compressive strength of the masonry unit.
- Mortar strength class of the masonry  $\geq$  M2,5 according to EN 998-2:2010.
- For other base materials of the use categories a and b the characteristic resistance of the anchor may be determined by job site tests according to ETAG 020, Annex B Edition March 2012.

**Temperature Range:**

- c: -40°C to 50°C (max. short term temperature + 50°C and max long term temperature +30°C )
- b: -40°C to 80°C (max. short term temperature + 80°C and max long term temperature +50°C )

**Use conditions (Environmental conditions):**

- Structures subject to dry internal conditions (zinc coated steel, stainless steel).
- Structures subject to external atmospheric exposure including industrial and marine environment (stainless steel).
- Structures subject to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).  
Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

**Design:**

- The anchorages are designed in accordance with the ETAG 020, Annex C Edition March 2012 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 position of the anchor is indicated on the design drawings
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 020 Edition March 2012.

**Installation:**

- Hole drilling by the drill modes acc. To Annex C for use category a and b.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from -5°C to +80°C
- Exposure to UV due to solar radiation of the anchor not protected  $\leq$  6 weeks

**Sormat SDF-8V**

**Intended Use  
Specifications**

**Annex B 1**



**Table B1: Installation Parameters**

Anchor type		SDF-S-8V SDF-KB-8V
Use categorie		a,b
Drill hole diameter	$d_0$ [mm] =	8
Cutting diameter of drill bit	$d_{cut}$ [mm] ≤	8,45
Depth of the drill hole to deepest point	$h_1$ [mm] ≥	60
Embedment depth of the anchor in the base material <sup>1)</sup>	$h_{nom}$ [mm] ≥	50
Diameter of the clearance hole in the fixture	$d_f$ [mm] ≤	8,5
Thickness of fixture	$t_{fix}$ [mm] ≥	10
Minimum temperature during installation process	[°C]	-5
Temperature range (c)	[°C]	+ 30 / + 50
Temperature range (b)	[°C]	+ 50 / + 80

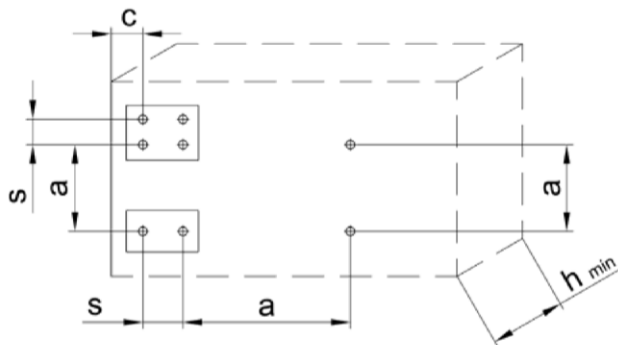
**Table B2: Minimum thickness of member, edge distance and spacing in concrete**

Compressive strenght	$h_{min}$ [mm]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]	$c_{min}$ [mm]	$s_{min}$ [mm]
Concrete ≥ C16/20	100	100	100	50	50
Concrete ≥ C12/15	100	140	115	70	70

Fixing points with a spacing  $a \leq s_{cr,N}$  are considered as a group with max. characteristic resistance  $N_{Rk,p}$  acc. to Table C3. For a spacing  $a > s_{cr,N}$  the anchors are always considered as single anchors, each with a characteristic resistance  $N_{Rk,p}$  acc. to C3.

- $h_{min}$  = Minimum thickness of member
- $c_{cr,N}$  = Characteristic edge distance
- $s_{cr,N}$  = Charakteristic spacing
- $c_{min}$  = minimum edge distance
- $s_{min}$  = minimum spacing

**Schema of distance and spacing in concrete**



**Sormat SDF-8V**

**Intended use**  
Installation parameters,  
Distance and spacing for use in concrete

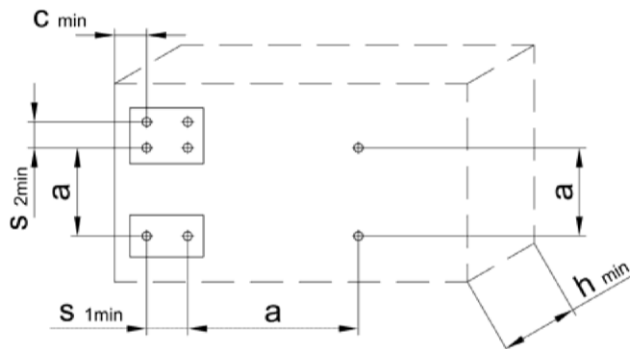
**Annex B 2**

**Table B3: Minimum distance and dimensions in masonry**

Base material	$h_{min}$ [mm]	$c_{min}$ [mm]	$a$ [mm]	$s_{1,min}$ [mm]	$s_{2,min}$ [mm]
<b>Clay brick, Mz</b> (DIN 105-100:2012-01 / EN 771-1:2011)	115	100	250	80	80
<b>Calcium silicate solid brick, KS</b> (DIN V 106:2005-10 / EN 771-2:2011)	115	100	250	80	80

- $h_{min}$  = Minimum thickness of member  
 $a$  = Characteristic spacing  
 $c_{min}$  = minimum edge distance  
 $s_{1,min}$  = minimum spacing (perpendicular to free edge)  
 $s_{2,min}$  = minimum spacing (parallel to free edge)

**Schema of distance and spacing in masonry**



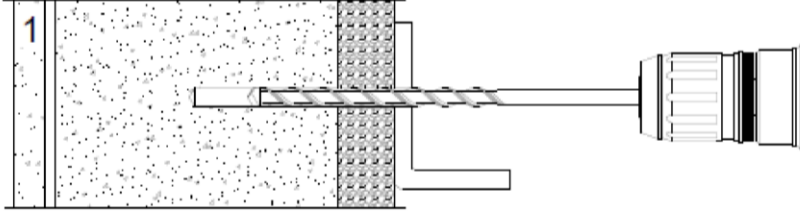
**Sormat SDF-8V**

**Intended use**  
Installation parameters,  
Distance and spacing for use in masonry

**Annex B 3**

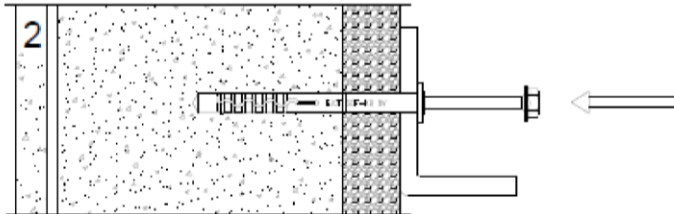
**Installation instructions**  
**(exemplary: fixing through metall growing part)**

Drill the bore hole  $\varnothing 8$  mm using the drill method described in the corresponding Annex C

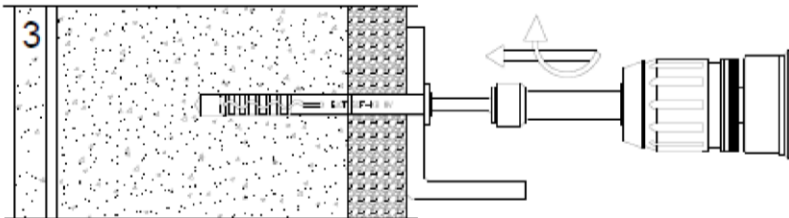


Clean the bore hole.

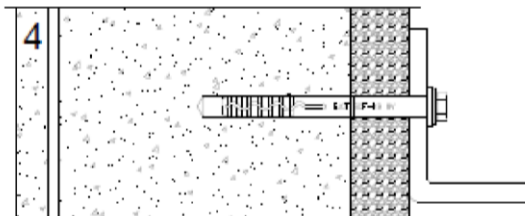
Insert assembly group of anchor (screw and sleeve) using a hammer, until the plastic sleeve is flush with surface of fixture



The screw is screwed –in until the head of the screw touches the plastic sleeve



Correctly installed anchor



**Sormat SDF-8V**

**Intended use**  
Installation instructions

**Annex B 4**

**Table C1: Characteristic resistance of the screw**

Type of anchor	SDF-S-8V SDF-KB-8V	
	Galvanized steel	Stainless steel
Characteristic tension resistance $N_{Rk,s}$ [kN]	10,62	10,62
Characteristic shear resistance $V_{Rk,s}$ [kN]	5,3	5,3
Characteristic bending resistance $M_{Rk,s}$ [Nm]	8,2	8,2

**Table C2: Displacements <sup>1)2)</sup> under tension and shear loading in concrete and solid masonry**

Type of anchor	Tension or shear load	Displacements under tension load		Displacements under shear load	
		$\delta_{N0}$ [mm]	$\delta_{N\infty}$ [mm]	$\delta_{V0}$ [mm]	$\delta_{V\infty}$ [mm]
SDF-S-8V SDF-KB-8V	F [kN]				
	2,6	0,4	0,8	1,8	2,8

<sup>1)</sup> Valid for all ranges of temperatures

<sup>2)</sup> Intermediate values by linear interpolation

**Table C3: Characteristic resistance for use in concrete<sup>1)</sup>**

Pull-out failure	Characteristic resistance	
Characteristic resistance $N_{Rk,p}$ <sup>2)</sup> [kN]	< C16/20	4,5
Characteristic resistance $N_{Rk,p}$ <sup>2)</sup> [kN]	≥ C16/20	6,5

<sup>1)</sup> Hammer drilling

<sup>2)</sup> Valid for all ranges of temperatures

**Table C4: Characteristic resistance  $F_{Rk}$  in masonry**

Base Material	Size of stone [LxWxH] (min. Format)	density-class $\rho$ [kg/dm <sup>3</sup> ]	min. Compressive strength $f_b$ [N/mm <sup>2</sup> ]	Drilling method	$F_{Rk}$ <sup>2)</sup> [kN]
Clay brick, Mz e.g. DIN 105-100:2012-01 / EN 771-1:2011	NF (240x115x71)	≥ 1,8	28	H <sup>1)</sup>	2,5
			20		2,0
			10		1,5
Calcium silicate brick, KS e.g. DIN V 106:2005-10 / EN 771-2:2011	NF (240x115x71)	≥ 2,0	20	H <sup>1)</sup>	2,5
			10		1,5

<sup>1)</sup> H = Hammer drilling

<sup>2)</sup> Valid for all ranges of temperatures

**Sormat SDF-8V**

**Performances**

Characteristic resistance of the screw, displacements  
Characteristic resistance for use in concrete and masonry

**Annex C 1**