DECLARATION OF PERFORMANCE No WKCS-3/23

1. Unique identification code of the product-type:

WKCS-3

2. Intended use/es:

Screws for use in timber constructions

3. Manufacturer:

Wkręt-met Sp. z o.o. Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

not applicable

system 3

4. Authorised representative:

5. System/s of AVCP:

EAD 130118-01-0603

6. European Assessment Document: **European Technical Assessment:**

Technical Assessment Body:

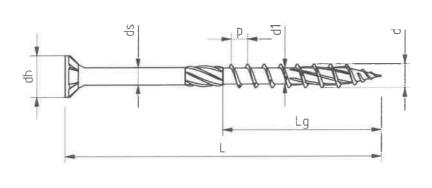
Notified body/ies:

ETA-18/0817 - 7/06/2023

DEUTSCHES INSTITUT FÜR BAUTECHNIK

0769

Essential characteristic	Performance/s	WKCS-3			
Mechanical resistance and stability (BWR1)					
		d	[mm]	3,0	
Dimensions	C	l _h	[mm]	6,0	
	C	l _s	[mm]	2,2	
	С	1,	[mm]	2,0	
		р		1,5	
		min	[mm]	30	
		max	[[40	
		min	[mana]	17	
	L _g	max	[mm]	22	
Characteristic yield moment	M	y,k	[Nm]	1,5	
Bending angle		χ	٥	40,9	
Characteristic tensile strength	f _{te}	ns,k	[kN]	3,5	
Characteristic torsional strength	f _{tc}	f _{tor,k}		1,5	
Insertion moment	R _{tor}	R _{tor,mean}		≤ f _{tor,k} / 1,5	
Characteristic yield strength		<i>ı</i> ,k	[N/mm ²]	NPD	



Characteristic withdrawal parameter	f _{ax,k}	[N/mm²]	13 ρa = 350 kg/m ³	for screws in solid or glued laminated timber, cross laminated timber and SWP members with maximum characteristic density of 440 kg/m³
	f _{ax,k}	[N/mm²]		characteristic density of 440
parameter	' ax,k	נוא/ווווו]	15	
		3	15	for screws in non pre-drilled LVL with 460 kg/m³ ≤ ρk ≤
			ρa = 480 kg/m ³	550 kg/m³
			22,5	for screws or for washer in connections with softwood and in connections with
	f _{head,k}		ρa = 350 kg/m3	wood-based panels with thicknesses above 20 mm
Characteristic head pull-through parameter		[N/mm²]	8	for screws in connections with wood-based panels
			-	with thicknesses between 12 mm and 20 mm
			8	for screws in connections with wood-based panels with a thickness below 12
			F _{ax,Rk} ≤ 400 N	mm (minimum thickness of the wood based panels of 1,2-d)
Slip medulus for mainly avially loaded corous	k	[N/mm] -	Softwood:	25 ⋅ d ⋅ l _{ef}
Slip modulus for mainly axially loaded screws	k _{ser}	[14/11111]		n length in the timber nber [mm]
Со	oating thickn	ness ≥ 5 μr	n, according to El 10683	N ISO 4042 or EN ISO
serv	The screws have been assessed as having satisfactory durability serviceability when used in timber structures using the timber sp described in Eurocode 5 and subject to the conditions defined by s classes 1, 2			

Mechanical resistance and stability (BWR1)

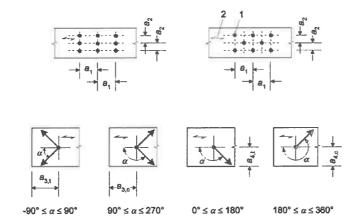
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=3	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	15	9	36	21	9	9
α=90°	12	12	21	21	15	9



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

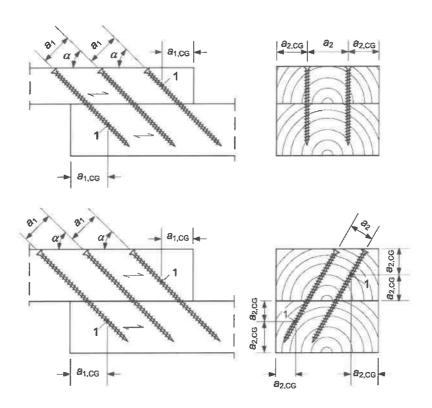
d=3	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	30	15	45	30	15	15
α=90°	15	15	30	30	21	15

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
21	15	30	12



Cross laminated timber CLT

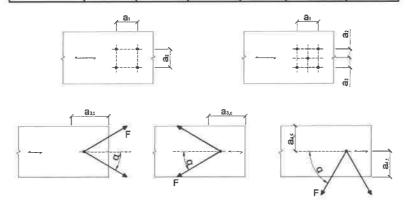
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 30 mm

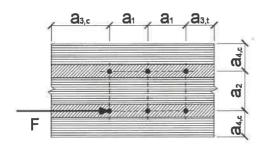
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 30 mm

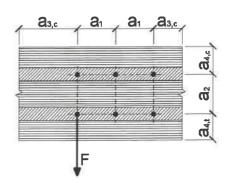
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=3	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	12	18	18	7,5	18	7,5
	A2.2	30	36	21	12	18	9



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification					
Safety in case of fire (BWR2)							
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023					

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierownik działu techniczne Adam Szczepanowski

[name]

[signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-3.5/23

1. Unique identification code of the product-type: WKCS-3.5

2. Intended use/es: Screws for use in timber constructions

3. Manufacturer: Wkręt-met Sp. z o.o.

Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative: not applicable

5. System/s of AVCP: system 3

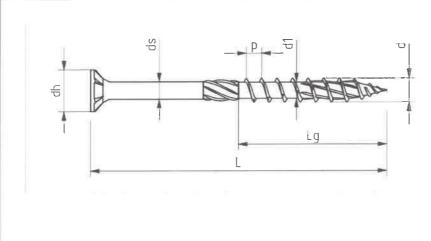
6. European Assessment Document: EAD 130118-01-0603

European Technical Assessment: ETA-18/0817 - 7/06/2023

Technical Assessment Body: DEUTSCHES INSTITUT FÜR BAUTECHNIK

Notified body/ies: 0769

Essential characteristic	Performance/s	WKCS-3.5						
Mechanical resistance and stability (BWR1)								
	(t	[mm]	3,5				
Dimensions	C	h	[mm]	7,0				
	C	s	[mm]	2,5				
	C	1	[mm]	2,3				
		р		1,8				
	L	min	[mm]	30				
		max	[111111]	50				
		min	[mm]	17				
	Lg	max	[mm]	30				
Characteristic yield moment	М	y,k	[Nm]	2				
Bending angle	(ž.	0	38,7				
Characteristic tensile strength	f _{te}	ns,k	[kN]	4				
Characteristic torsional strength	_	f _{tor,k}		2				
Insertion moment	R _{tor} ,	R _{tor,mean}		≤ f _{tor,k} / 1,5				
Characteristic yield strength	f _v	,k	[N/mm ²]	NPD				



Characteristic withdrawal parameter Fault Softwood: Softwo						
Characteristic withdrawal parameter Fauk [N/mm²]				13	laminated timber and SWP	
The screws have been assessed as having satisfactory durability against corrosion 15	Characteristic withdrawal	f .	2-	pa = 350 kg/m ³	characteristic density of 440	
Pa = 480 kg/m³ 20,8	parameter	ax,k	[14/111111]	15	for screws in non pre-drilled LVL with 460 kg/m³ ≤ ok ≤	
Characteristic head pull-through parameter F head,k [N/mm²] 8 for screws in connections with wood-based panels with thicknesses above 20 mm 9 1 1 1 1 1 1 1 1 1				ρa = 480 kg/m ³		
Characteristic head pull-through parameter				20,8	for screws or for washer in connections with softwood and in connections with	
Characteristic head pull-through parameter	Characteristic head pull-through parameter		[N/mm²]	ρa = 350 kg/m3	wood-based panels with thicknesses	
8 for screws in connections with wood-based panels with a thickness below 12 mm (minimum thickness or the wood based panels of 1,2·d) Slip modulus for mainly axially loaded screws N/mm Softwood: 25 · d · l _{ef}		f _{head,k}		8	with wood-based panels	
$K_{ser} = \begin{bmatrix} N/mm \end{bmatrix} \qquad \begin{cases} Softwood: & 25 \cdot d \cdot l_{ef} \\ Ief- Penetration length in the timber member [mm] \end{cases}$ $Coating thickness \geq 5 \ \mu m, according to EN ISO 4042 or EN ISO 10683$ $The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service and the suith a thickness below 12 mm (minimum thickness or the wood based panels of 1,2-d) Softwood: 25 \cdot d \cdot l_{ef} Ief- Penetration length in the timber member [mm] $				-		
Slip modulus for mainly axially loaded screws $k_{ser} = [N/mm] \\ \hline $				8	with wood-based panels with a thickness below 12	
Slip modulus for mainly axially loaded screws N/mm lef- Penetration length in the timber member [mm]				F _{ax,Rk} ≤ 400 N	the wood based panels of	
Durability against corrosion Durability against corrosion The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service		l.	[61/2222]	Softwood:	25 ⋅ d ⋅ l _{ef}	
Durability against corrosion The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service	Silp modulus for mainly axially loaded screws	K _{ser}	[M/MM]		-	
serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service		Coating thick	ness ≥ 5 μι		N ISO 4042 or EN ISO	
	Durability against corrosion	serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service				

Mechanical resistance and stability (BWR1)

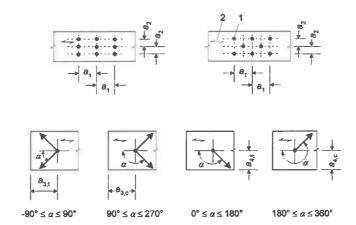
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=3,5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	17,5	10,5	42	24,5	10,5	10,5
α=90°	14	14	24,5	24,5	17,5	10,5



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

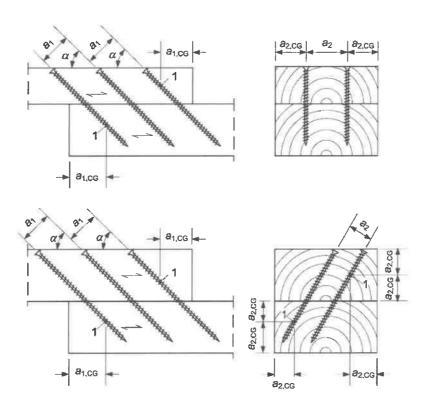
d=3,5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	35	17,5	52,5	35	17,5	17,5
α=90°	17,5	17,5	35	35	24,5	17,5

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
24,5	17,5	35	14



Cross laminated timber CLT

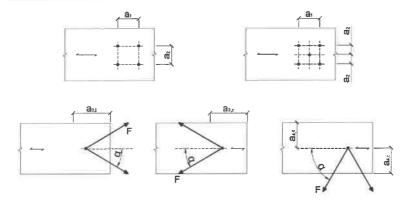
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 35 mm

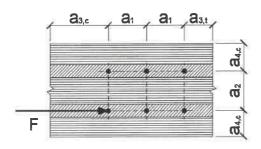
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 35 mm

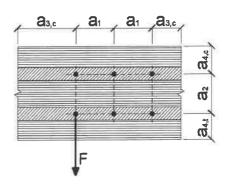
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=3,5	a1	a3,t	a3,c	a2	a4,t	a4,c
1	A2.1	14	21	21	8,75	21	8,75
Ī	A2.2	35	42	24,5	14	21	10,5



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification						
Safety in case of fire (BWR2)								
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023						

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierownik działu technicznego

Adam Szczepanowski - 415 -

> [name] [signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-4/23

1. Unique identification code of the product-type: WKCS-4

2. Intended use/es: Screws for use in timber constructions

3. Manufacturer: Wkręt-met Sp. z o.o.

Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative: not applicable

5. System/s of AVCP: system 3

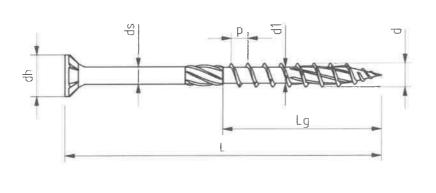
6. European Assessment Document: EAD 130118-01-0603

European Technical Assessment: ETA-18/0817 - 7/06/2023

Technical Assessment Body: DEUTSCHES INSTITUT FÜR BAUTECHNIK

Notified body/ies: 0769

Essential characteristic	Performance/s	WKCS-4			
Mechanical resistance and stability (BWR1)					
	(d		4,0	
	d	l _h	[mm]	8,0	
	С	s	[mm]	2,9	
	d		[mm]	2,6	
Dimensions	р		[mm]	2,0	
	L	min	[mm]	30	
	-	max	[[[[[]]]	70	
	Lg	min	[mm]	17	
		max	[mm]	40	
Characteristic yield moment	M	y,k	[Nm]	3,5	
Bending angle	(0	37,1	
Characteristic tensile strength	f _{te}	ns,k	[kN]	6	
Characteristic torsional strength		or,k	[Nm]	3,5	
Insertion moment	R _{tor} ,	mean	[Nm]	$\leq f_{tor,k}/1,5$	
Characteristic yield strength		<i>,</i> ,k	[N/mm ²]	NPD	



			13	for screws in solid or glued laminated timber, cross laminated timber and SWP	
Characteristic withdrawal	f _{ax,k}	[N/mm²]	ρa = 350 kg/m ³	members with maximum characteristic density of 440 kg/m ³	
parameter	' ax,k	[147]	15	for screws in non pre-drilled LVL with 460 kg/m³ ≤ pk ≤	
			ρa = 480 kg/m ³	550 kg/m³	
			19,4	for screws or for washer in connections with softwood and in connections with	
Characteristic head pull-through parameter			ρa = 350 kg/m3	wood-based panels with thicknesses above 20 mm	
	f _{head,k}	[N/mm ²]	8	for screws in connections with wood-based panels	
			-	with thicknesses between 12 mm and 20 mm	
			8	for screws in connections with wood-based panels with a thickness below 12	
			F _{ax,Rk} ≤ 400 N	mm (minimum thickness of the wood based panels of 1,2·d)	
			Softwood:	25 · d · l _{ef}	
Slip modulus for mainly axially loaded screws	k _{ser}	[N/mm]		n length in the timber mber [mm]	
	Coating thick	ness ≥ 5 μ	m, according to E 10683	N ISO 4042 or EN ISO	
Durability against corrosion	The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service classes 1, 2				

Mechanical resistance and stability (BWR1)

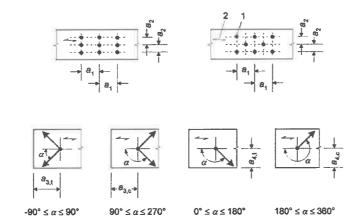
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=4	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	20	12	48	28	12	12
α=90°	16	16	28	28	20	12



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

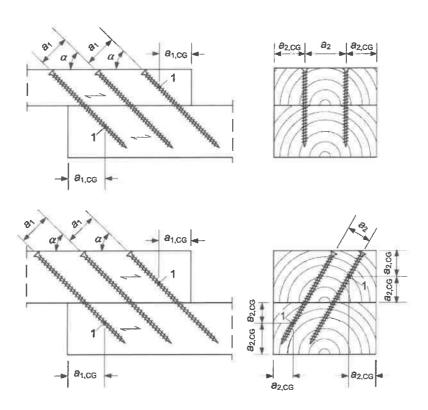
d=4	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	40	20	60	40	20	20
α=90°	20	20	40	40	28	20

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the	
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]	
28	20	40	16	



Cross laminated timber CLT

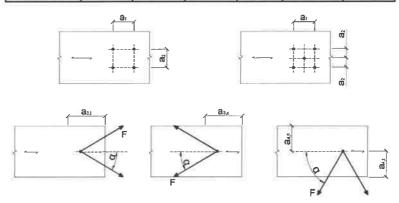
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 40 mm

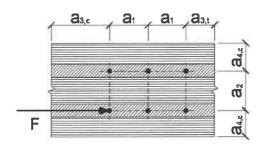
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 40 mm

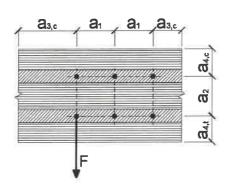
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=4	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	16	24	24	10	24	10
[A2.2	40	48	28	16	24	12



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification						
Safety in case of fire (BWR2)								
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023						

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierownik działu technicznego

- 415 -[name] [signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-4.5/23

1. Unique identification code of the product-type:

WKCS-4.5

2. Intended use/es:

Screws for use in timber constructions

3. Manufacturer:

Wkręt-met Sp. z o.o. Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative:

not applicable

5. System/s of AVCP:

system 3

6. European Assessment Document:

European Technical Assessment:

Technical Assessment Body:

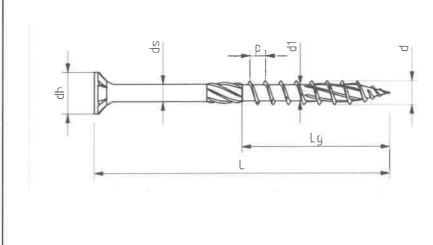
Notified body/ies:

EAD 130118-01-0603 ETA-18/0817 - 7/06/2023

DEUTSCHES INSTITUT FÜR BAUTECHNIK

0769

Essential characteristic	Performance/s	WKCS-4.5			
Mechanical resistance and stability (BWR1)					
		d		4,5	
	(l _h	[mm]	9,0	
		l _s	[mm]	3,1	
	(! ₁	[mm]	3,0	
Dimensions		р		2,2	
	L	min	[mm]	40	
		max	[mm]	80	
	Lg	min	[mm]	22	
		max	[mm]	50	
Characteristic yield moment	IV	l _{y,k}	[Nm]	5	
Bending angle		χ	۰	35,7	
Characteristic tensile strength	$f_{ m te}$	ns,k	[kN]	8	
Characteristic torsional strength		or,k	[Nm]	4,5	
Insertion moment	R _{tor}	.mean	[Nm]	≤ f _{tor,k} / 1,5	
Characteristic yield strength		/,k	[N/mm ²]	NPD	



for screws in solid to laminated timber, laminated timber at members with max characteristic densition kg/m^3	, cross				
ρa = 350 kg/m ³ characteristic densit					
t . [[N/mm ²]					
parameter f ax,k [N/mm²] 15 for screws in non pre					
ρa = 480 kg/m ³	_ ,,, _				
18,3 for screws or for wa connections with so and in connections	oftwood				
pa = 350 kg/m3 wood-based panel thicknesses above 20 mm	ls with				
Characteristic head pull-through parameter $f_{head,k}$ [N/mm ²]	panels				
with thicknesses between and 20 mi					
8 for screws in conne with wood-based p with a thickness be	panels low 12				
$F_{ax,Rk} \leq 400 \; N \qquad \qquad$					
Softwood: 25 · d · l _{ef}					
Slip modulus for mainly axially loaded screws k_{ser} [N/mm] lef- Penetration length in the tin member [mm]	mber				
Coating thickness ≥ 5 μm, according to EN ISO 4042 or EN 10683	ISO				
serviceability when used in timber structures using the timber sp	The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service classes 1, 2				

Mechanical resistance and stability (BWR1)

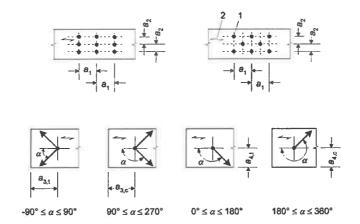
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=4,5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	22,5	13,5	54	31,5	13,5	13,5
α=90°	18	18	31,5	31,5	22,5	13,5



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

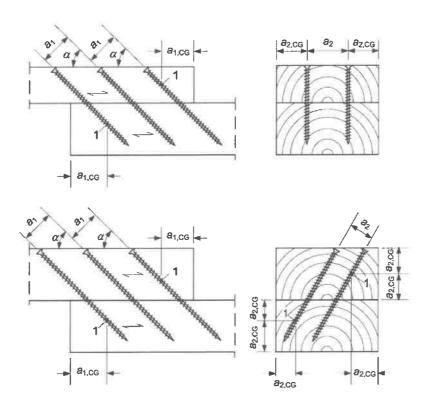
d=4,5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	45	22,5	67,5	45	22,5	22,5
α=90°	22,5	22,5	45	45	31,5	22,5

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
31,5	22,5	45	18



Cross laminated timber CLT

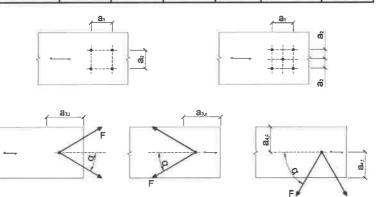
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 45 mm

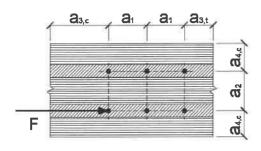
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 45 mm

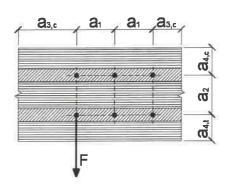
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=4,5	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	18	27	27	11,25	27	11,25
	A2.2	45	54	31,5	18	27	13,5



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification
Safety in case of fire (BWR2)		
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierwnik działu techniczne

m Szczepanowski 415 -

[name]
[signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-5/23

1. Unique identification code of the product-type: WKCS-5

2. Intended use/es: Screws for use in timber constructions

3. Manufacturer: Wkręt-met Sp. z o.o.

Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative: not applicable

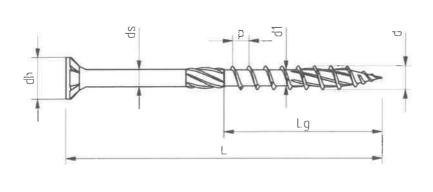
5. System/s of AVCP: system 3

6. European Assessment Document: EAD 130118-01-0603
European Technical Assessment: ETA-18/0817 - 7/06/2023

Technical Assessment Body: DEUTSCHES INSTITUT FÜR BAUTECHNIK

Notified body/ies: 0769

Essential characteristic	Performance/s	WKCS-5			
Mechanical resistance and stability (BWR1)					
		d	[mm]	5,0	
	C	h	[mm]	10,0	
	C	l _s	[mm]	3,5	
	C	d ₁		3,2	
Dimensions	р		[mm]	2,6	
		min	[mm]	40	
	L	max	[mm]	120	
		min	[]	22	
	L _g	max	[mm]	60	
Characteristic yield moment	М	γ,k	[Nm]	6	
Bending angle	(0	34,6	
Characteristic tensile strength		ns,k	[kN]	9	
Characteristic torsional strength	f _{tor,k}		[Nm]	6	
Insertion moment		mean	[Nm]	≤ f _{tor,k} / 1,5	
Characteristic yield strength		,k	[N/mm ²]	NPD	



		[N/mm²]	12	for screws in solid or glued laminated timber, cross laminated timber and SWP members with maximum	
Characteristic withdrawal	f _{ax,k}		ρa = 350 kg/m ³	characteristic density of 440 kg/m³	
parameter	ax,k		15	for screws in non pre-drilled LVL with 460 kg/m³ ≤ pk ≤	
			ρa = 480 kg/m ³	550 kg/m³	
		[N/mm²]	17,4	for screws or for washer in connections with softwood and in connections with	
			ρa = 350 kg/m3	wood-based panels with thicknesses above 20 mm	
Characteristic head pull-through parameter	f _{head,k}		8	for screws in connections with wood-based panels	
			-	with thicknesses between 12 mm and 20 mm	
			8	for screws in connections with wood-based panels with a thickness below 12	
			F _{ax,Rk} ≤ 400 N	mm (minimum thickness of the wood based panels of 1,2·d)	
	1.	rai /	Softwood:	25 · d · l _{ef}	
Slip modulus for mainly axially loaded screws	k _{ser}	[N/mm]	lef- Penetration length in the timber member [mm]		
	Coating thick	ness ≥ 5 μι	m, according to E 10683	N ISO 4042 or EN ISO	
Durability against corrosion	serviceability w	hen used in	timber structures	isfactory durability and using the timber species ditions defined by service	

Mechanical resistance and stability (BWR1)

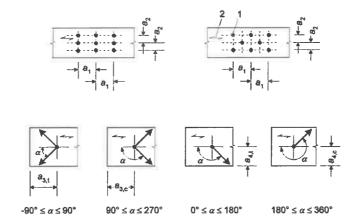
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	25	15	60	35	15	15
α=90°	20	20	35	35	35	15



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

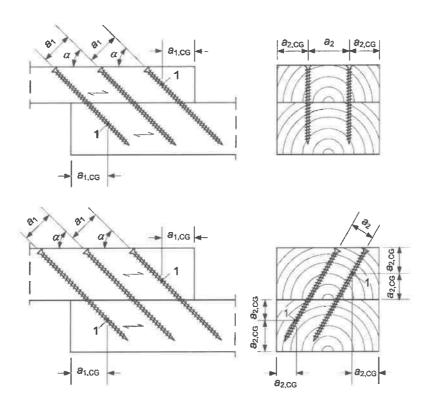
d=5	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	60	25	75	50	25	25
α=90°	25	25	50	50	50	25

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	Center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
35	25	50	20



Cross laminated timber CLT

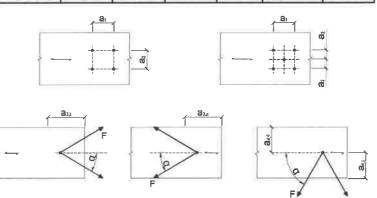
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 50 mm

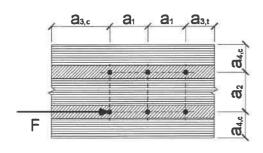
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 50 mm

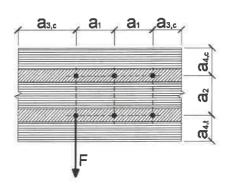
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=5	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	20	30	30	12,5	30	12,5
	A2.2	50	60	35	20	30	15



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification
Safety in case of fire (BWR2)	2)	
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierownik działu technicznego

dam Szczepanowski 415 -

(name)

[signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-6/23

1. Unique identification code of the product-type: WKCS-6

2. Intended use/es: Screws for use in timber constructions

3. Manufacturer: Wkręt-met Sp. z o.o.

Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative: not applicable

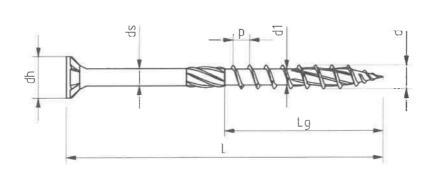
5. System/s of AVCP: system 3

6. European Assessment Document: EAD 130118-01-0603
European Technical Assessment: ETA-18/0817 - 7/06/2023

Technical Assessment Body: DEUTSCHES INSTITUT FÜR BAUTECHNIK

Notified body/ies: 0769

Essential characteristic				Performance/s	WKCS-6
Mechanical resistance and stability (BWR1)					
	(k	[mm]	6,0	
	d	h	[mm]	12,0	
	C	l _s	[mm]	4,3	
	C	1	[mm]	3,8	
Dimensions		р		3,3/4,5	
		min	[mama]	50	
	L L	max	[mm]	300	
		min	[mm]	30	
	Lg	max	[mm]	75	
Characteristic yield moment	М	y,k	[Nm]	10	
Bending angle		ι	0	32,8	
Characteristic tensile strength	f _{te}	ns,k	[kN]	13	
Characteristic torsional strength	f _{tc}	f _{tor,k}		10	
Insertion moment	R _{tor,}		[Nm]	≤ f _{tor,k} / 1,5	
Characteristic yield strength		,k	[N/mm ²]	NPD	



Characteristic withdrawal parameter Characteristic head pull-through parameter Characteristic head pull-through parameter Characteristic head pull-through parameter Feasily [N/mm²] Slip modulus for mainly axially loaded screws Durability against corrosion Line for screws in solid or glued familiated timber, cross						
Characteristic withdrawal parameter					laminated timber, cross laminated timber and SWP members with maximum characteristic density of 440	
The screws in non pre-drilled LVL with 460 kg/m³ ≤ pk ≤ S50 kg/m³ 15,9 for screws or for washer in connections with softwood and in connections with wood-based panels with with wood-based panels with micknesses above 20 mm 8 for screws in connections with softwood and in connections with wood-based panels with micknesses above 20 mm 8 for screws in connections with wood-based panels with micknesses between 12 mm and 20 mm Figure 4 400 N Slip modulus for mainly axially loaded screws N/mm Softwood: 25 · d · l _{ef} micknesses between 12 mm (minimum thickness of the wood based panels of 1,2-d) Softwood: 25 · d · l _{ef} minimum thickness of the wood based panels of 1,2-d) Coating thickness ≥ 5 µm, according to EN ISO 4042 or EN ISO 10683 The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service	I I	f _{ax,k}	[N/mm ²]			
Pa = 480 kg/m³ 15,9					1	
Characteristic head pull-through parameter Factor F				ρa = 480 kg/m ³		
Characteristic head pull-through parameter Factor Pack Pa				15,9	connections with softwood	
Characteristic head pull-through parameter		f _{head,k}		pa = 350 kg/m3 8 for screws in connumith whicknesses bet mm and 20 m - 8 for screws in connumith with wood-based with thicknesses bet mm and 20 m -	wood-based panels with thicknesses	
	Characteristic head pull-through parameter		[N/mm²]		with wood-based panels	
$K_{ser} = \begin{bmatrix} N/mm \end{bmatrix} \begin{tabular}{c} with wood-based panels with a thickness below 12 mm (minimum thickness of the wood based panels of 1,2·d) \end{tabular} \begin{tabular}{c} Softwood: & 25 \cdot d \cdot l_{ef} \\ \hline Ef- Penetration length in the timber member [mm] \end{tabular} \begin{tabular}{c} Coating thickness ≥ 5 μm, according to EN ISO 4042 or EN ISO 10683 \end{tabular} \begin{tabular}{c} The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service 1.50 and subject to the conditions defined by service 1.50 and subject to the conditions defined by service 1.50 and subject to the conditions defined by service 1.50 and subject to the conditions defined by service 1.50 and subject to the conditions defined by service 1.50 and $$						
Slip modulus for mainly axially loaded screws $k_{ser} = [N/mm] \begin{tabular}{ c c c c c }\hline Softwood: & 25 \cdot d \cdot l_{ef} \\\hline & lef- Penetration length in the timber member [mm] \\\hline & Coating thickness $\geq 5 \ \mu m$, according to EN ISO 4042 or EN ISO 10683 \\\hline & & & & & & & & & & & & & & & & & & $					with wood-based panels with a thickness below 12	
Slip modulus for mainly axially loaded screws Slip modulus for mainly axially loaded screws Ser				F _{ax,Rk} ≤ 400 N	the wood based panels of	
Durability against corrosion Durability against corrosion Durability against corrosion Durability against corrosion The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service	Slip modulus for mainly avially loaded screws	k	[N/mm]			
Durability against corrosion The screws have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service	Sup inodulus for ilialiliy axially loaded screws			mer	mber [mm]	
serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service						
	Durability against corrosion	serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service				

Mechanical resistance and stability (BWR1)

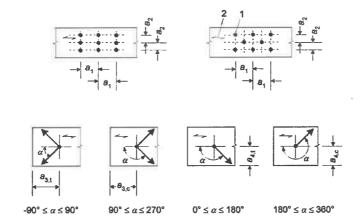
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=6	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	30	18	72	42	18	18
α=90°	24	24	42	42	42	18



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

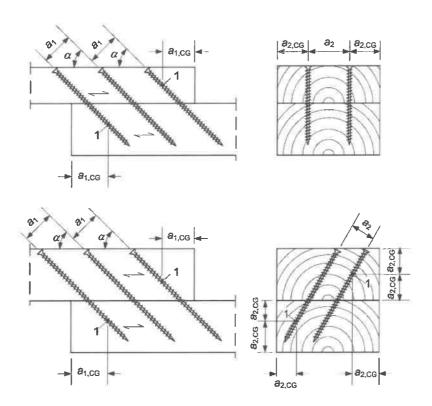
d=6	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	72	30	90	60	30	30
α=90°	30	30	60	60	60	30

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain			minimum edge distance of the center of gravity of the threaded part of the screw in the member / lateral side	
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]	
42	30	60	24	



Cross laminated timber CLT

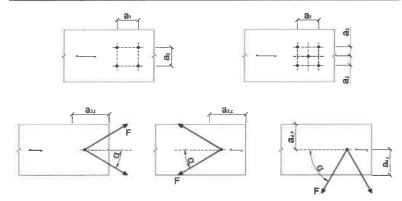
The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

Minimum thickness of the cross laminated timber: 10d= 60 mm

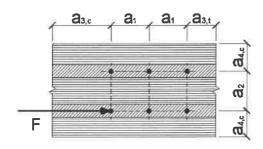
Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 60 mm

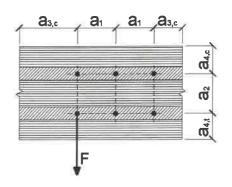
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

A.2.3	d=6	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	24	36	36	15	36	15
	A2.2	60	72	42	24	36	18



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification
Safety in case of fire (BWR2)		
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kiekownik działu technicznego

Adam Szczepanowski

[name]

415 -

[signature]

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

DECLARATION OF PERFORMANCE No WKCS-8/23

1. Unique identification code of the product-type:

WKCS-8

2. Intended use/es:

Screws for use in timber constructions

3. Manufacturer:

Wkręt-met Sp. z o.o. Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative:

not applicable

5. System/s of AVCP:

system 3

6. European Assessment Document:

European Technical Assessment:

Technical Assessment Body:

Notified body/ies:

EAD 130118-01-0603

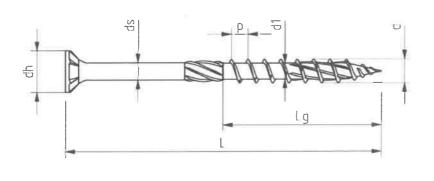
ETA-18/0817 - 7/06/2023

DEUTSCHES INSTITUT FÜR BAUTECHNIK

0769

7. Declared performance/s:

Essential characteristic	Performance/s	WKCS-8					
Mechanical resistance and stability (BWR1)							
	(k	[mm]	8,0			
Dimensions	C	h	[mm]	14,0			
	C	l _s	[mm]	5,8			
	C	1	[mm]	5,5			
		р		5,6			
		min	[mm]	40			
	L	max		600			
		min	[mm]	35			
	Lg	max	[mm]	100			
Characteristic yield moment	M	y,k	[Nm]	25			
Bending angle	-	χ	0	30,5			
Characteristic tensile strength	f _{te}	ns,k	[kN]	25			
Characteristic torsional strength		f _{tor,k}		27			
Insertion moment		R _{tor,mean}		≤ f _{tor,k} / 1,5			
Characteristic yield strength		f _{y,k} [N/		NPD			



		12 ρa = 350 kg/m ³	for screws in solid or glued laminated timber, cross laminated timber and SWP members with maximum characteristic density of 440 kg/m³
f _{ax,k}	[N/mm ²]	13	for screws in non pre-drilled LVL with 460 kg/m³ ≤ pk ≤
		ρa = 480 kg/m ³	550 kg/m³
		14,7	for screws or for washer in connections with softwood and in connections with
	[N/mm²]	ρa = 350 kg/m3	wood-based panels with thicknesses above 20 mm
f _{head,k}		8	for screws in connections with wood-based panels
		-	with thicknesses between 12 mm and 20 mm
		8	for screws in connections with wood-based panels with a thickness below 12
		F _{ax,Rk} ≤ 400 N	mm (minimum thickness of the wood based panels of 1,2·d)
		Softwood:	25 ⋅ d ⋅ l _{ef}
K _{ser}	[N/mm]		n length in the timber mber [mm]
Coating thick	ness ≥ 5 μι	m, according to E 10683	N ISO 4042 or EN ISO
The screws have been assessed as having satisfactory durability serviceability when used in timber structures using the timber sp described in Eurocode 5 and subject to the conditions defined by classes 1, 2			
	f _{head,k} k _{ser} Coating thick The screws haserviceability w	f head,k [N/mm²] k _{ser} [N/mm] ← Coating thickness ≥ 5 μ The screws have been assiserviceability when used in	$f_{ax,k} = \begin{bmatrix} N/mm^2 \end{bmatrix}$ $f_{ax,k} = \begin{bmatrix} N/mm^2 \end{bmatrix}$ $pa = 350 \text{ kg/m}^3$ $pa = 480 \text{ kg/m}^3$ $14,7$ $pa = 350 \text{ kg/m}^3$ 8 $f_{head,k} = \begin{bmatrix} N/mm^2 \end{bmatrix}$ $R_{ax,Rk} \le 400 \text{ N}$

Essential characteristic

Mechanical resistance and stability (BWR1)

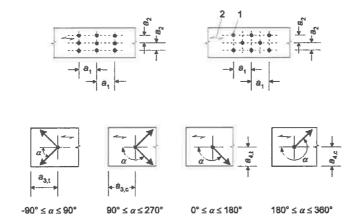
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=8	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	40	24	96	56	24	24
α=90°	32	32	56	56	56	24



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

d=8	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	96	40	120	80	40	40
α=90°	40	40	80	80	80	40

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

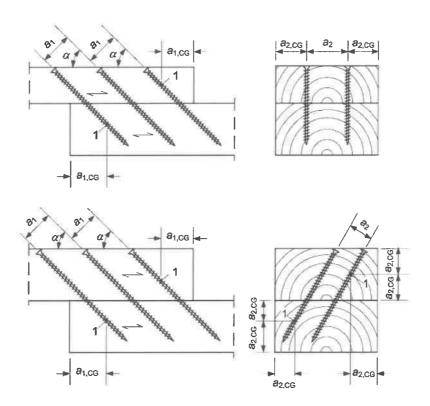
Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and d = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

Minimum distances from the unloaded edge perpendicular to the grain may be reduced to $3 \cdot d$ also for timber thickness t < $5 \cdot d$, if the spacing parallel to the grain and the end distance is at least $25 \cdot d$.

Only axially loaded screws

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
56	40	80	32



Cross laminated timber CLT

The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

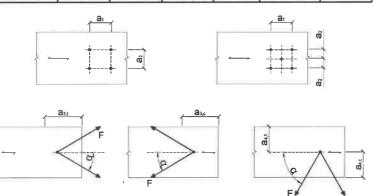
Minimum thickness of the cross laminated timber: 10d= 80 mm

Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 80 mm

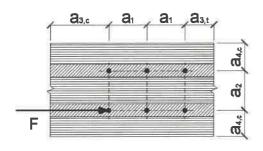
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

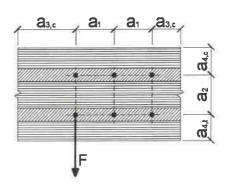
Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

A.2.3	d=8	a1	a3,t	a3,c	a2	a4,t	a4,c
	A2.1	32	48	48	20	48	20
	A2.2	80	96	56	32	48	24



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic Performance/s		Technical specification
Safety in case of fire (BWR2)	Т	
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kierownik działu technicznego

Szczepanowski 415 -

[name]

[signature]

The screws are used for connections in load bearing timber structures between wood-based members or between those members and steel members:

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

WKFC and WKFS screws are used for compression and tension reinforcing of timber structures perpendicular to the grain.

DECLARATION OF PERFORMANCE No WKCS-10/23

1. Unique identification code of the product-type: WKCS-10

2. Intended use/es: Screws for use in timber constructions

3. Manufacturer: Wkręt-met Sp. z o.o.

Kuźnica Kiedrzyńska

ul. Wincentego Witosa 170/176; 42-233 Mykanów

4. Authorised representative: not applicable

5. System/s of AVCP: system 3

6. European Assessment Document: EAD 130118-01-0603

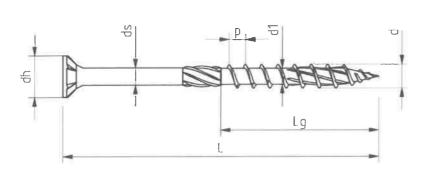
European Technical Assessment: ETA-18/0817 - 7/06/2023

Technical Assessment Body: DEUTSCHES INSTITUT FÜR BAUTECHNIK

Notified body/ies: 0769

7. Declared performance/s:

Essential characteristic	Performance/s	WKCS-10						
Mechanical resistance and stability (BWR1)								
		h	[mm]	10,0				
	С	l _h	[mm]	18,0				
	C	s	[mm]	7,0				
	С		[mm]	6,3				
Dimensions	р		[mm]	6,0				
	L	min	[mama]	60				
		max	[mm]	600				
	Lg	min	[mm]	50				
		max	[[[[[[]]]	100				
Characteristic yield moment	M	y,k	[Nm]	43				
Bending angle	(χ	0	29				
Characteristic tensile strength	f _{te}	ns,k	[kN]	36				
Characteristic torsional strength	f _{tor,k}		[Nm]	45				
Insertion moment	R _{tor,mean}		[Nm]	≤ f _{tor,k} / 1,5				
Characteristic yield strength			[N/mm ²]	NPD				



Characteristic withdrawal			11 ρa = 350 kg/m ³	for screws in solid or glued laminated timber, cross laminated timber and SWP members with maximum characteristic density of 440 kg/m³
parameter	f _{ax,k}	[N/mm ²]	13	for screws in non pre-drilled LVL with 460 kg/m³ ≤ pk ≤
			ρa = 480 kg/m ³	550 kg/m³
			13	for screws or for washer in connections with softwood and in connections with
		[N/mm²]	ρa = 350 kg/m3	wood-based panels with thicknesses above 20 mm
Characteristic head pull-through parameter	f _{head,k}		8	for screws in connections with wood-based panels
			-	with thicknesses between 12 mm and 20 mm
			8	for screws in connections with wood-based panels with a thickness below 12
			F _{ax,Rk} ≤ 400 N	mm (minimum thickness of the wood based panels of 1,2·d)
			Softwood:	25 · d · l _{ef}
Slip modulus for mainly axially loaded screws	k _{ser}	[N/mm]		n length in the timber mber [mm]
	Coating thick	ness ≥ 5 μι		N ISO 4042 or EN ISO
Durability against corrosion	The screws have been assessed as having satisfactory durability as serviceability when used in timber structures using the timber specidescribed in Eurocode 5 and subject to the conditions defined by seconds 1, 2			

Essential characteristic

Mechanical resistance and stability (BWR1)

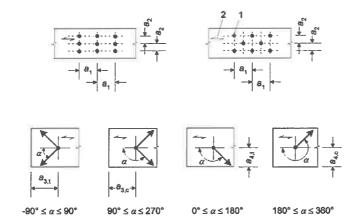
Spacing, end and edge distances of the screws and minimum thickness of the timber material

Laterally or laterally and axially loaded screws

Screws in pre-drilled holes

For KLIMAS screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

d=10	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	50	30	120	70	30	30
α=90°	40	40	70	70	70	30



Minimum thickness for structural wood-based members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm.

Screws in non pre-drilled holes

For KLIMAS screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

d=10	a ₁ [mm]	a ₂ [mm]	a _{3,t} [mm]	a _{3,c} [mm]	a _{4,t} [mm]	a _{4,c} [mm]
α=0°	120	50	150	100	50	50
α=90°	50	50	100	100	100	50

For Douglas fir members minimum spacings and distances parallel to the grain shall be increased by 50 %. Minimum distances from loaded or unloaded ends parallel to the grain shall be at least $15 \cdot d$ for screws with outer thread diameter d > 8 mm and timber thickness $t < 5 \cdot d$.

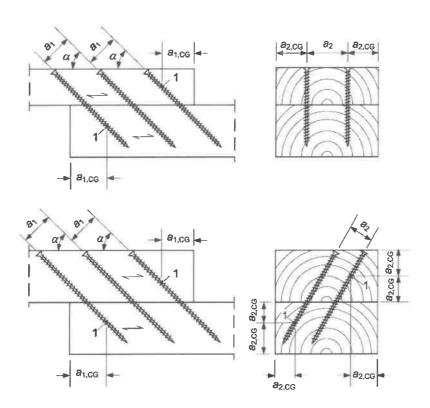
Minimum thickness for structural wood-based members made from solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm and t = 40 mm for screws with outer thread diameter d = 10 mm, if the spacing parallel to grain and the end distance are at least $25 \cdot d$.

Minimum distances from the unloaded edge perpendicular to the grain may be reduced to $3 \cdot d$ also for timber thickness t < $5 \cdot d$, if the spacing parallel to the grain and the end distance is at least $25 \cdot d$.

Only axially loaded screws

For KLIMAS screws the minimum spacings, end and edge distances as well as the minimum member thickness are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

minimum screw spacing parallel to the grain	minimum screw spacing perpedicular to the grain	minimum end distance of the center of gravity of the threaded part of the screw in the member / front side	center of gravity of the
a ₁ [mm]	a ₂ [mm]	a _{1,CG} [mm]	a _{2,CG} [mm]
70	50	100	40



Cross laminated timber CLT

The minimum requirements for spacing, end and edge distances of screws in the wide or narrow faces of cross laminated timber are summarised in Table A.2.3. The definition of spacings, end and edge distance is shown in Figure A.2.1 and Figure A.2.2. The minimum spacings, end and edge distances in the narrow faces are independent of the angle between screw axis and grain direction. They shall be used based on the following conditions:

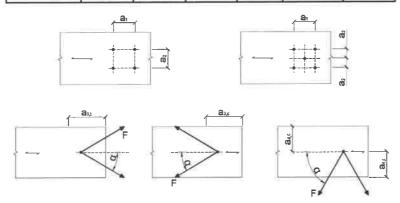
Minimum thickness of the cross laminated timber: 10d= 100 mm

Minimum penetration depth in the narrow faces of the cross laminated timber: 10d= 100 mm

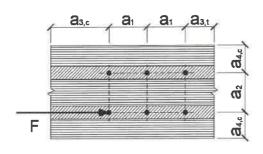
For load components perpendicular to the wide faces (see Figure A.2.2 right) the tensile stresses perpendicular to the grain should be transferred by reinforcing screws.

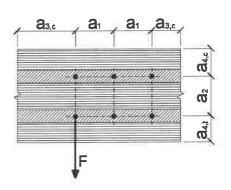
Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

A.2.3	d=10	a1	a3,t	а3,с	a2	a4,t	a4,c
	A2.1	40	60	60	25	60	25
i	A2.2	100	120	70	40	60	30



A.2.1 Definition of spacing, end and edge distances in the plane surface of the cross laminated timber.





A.2.2 Definition of spacing, end and edge distances in the edge surface of the cross laminated timber. For screws in the edge surface, a1 and a3 are parallel to the CLT plane face, a2 and a4 perpendicular to CLT plane face.

Essential characteristic	Performance/s	Technical specification						
Safety in case of fire (BWR2)								
Reaction to fire	Euroclass A1	ETA-18/0817 - 7/06/2023						

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Kuźnica Kiedrzyńska 12-06-2023

[place]
[date of issue]

Kielownik działu technicznego

Adam Szczepanowski

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[name] [signature] The screws are used for connections in load bearing timber structures between wood-based members or between those members and steel members:

- Solid timber (softwood) according to EN 14081-1;
- Glued laminated timber (softwood) according to EN 14080;
- Laminated veneer lumber LVL made of softwood according to EN 14374, arrangement of the screws only perpendicular to the plane of the veneers;
- Glued solid timber according to EN 14080;
- Cross-laminated timber made from softwood according to European Technical Assessments.

The screws may be used for connecting the following wood-based panels to the timber members mentioned above:

- Plywood according to EN 636 and EN 13986;
- Oriented Strand Board, OSB according to EN 300 and EN 13986;
- Particleboard according to EN 312 and EN 13986;
- Fibreboards according to EN 622-2, EN 622-3 and EN 13986;
- Cement-bonded particle boards according to EN 634-2 and EN 13986;
- Solid-wood panels according to EN 13353 and EN 13986.

Wood-based panels are only be arranged on the side of the screw head. KLIMAS screws with an outer thread diameter of at least 6 mm can be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical facades.

WKFC and WKFS screws are used for compression and tension reinforcing of timber structures perpendicular to the grain.