



Agreement on
KVH® (Structural timber)
made of spruce, fir, pine, larch and Douglas fir



Preamble

The characteristics of KVH® were defined by the Association of the German Sawmill and Wood Industry (VDS) and the Association of German Carpenters (BDZ) in an Association Agreement in 1994, thus considering the increased requirements of contemporary timber construction.

The Agreement was adapted to technical developments in 1997, 2003 and 2015 by Holzbau Deutschland and the Überwachungsgemeinschaft Konstruktionsvollholz e.V.

The building authority requirements for structural finger jointed timber KVH® are given in the European product standard DIN EN 15497 in conjunction with the application standard DIN 20000-7. For non-finger-jointed structural solid timber KVH®, DIN EN 14081-1 in conjunction with the application standard DIN 20000-5 applies.

In addition, KVH® will meet the following requirements under this Agreement:

- Kiln drying to a moisture content of $\leq 18\%$
- increased requirements for dimensional accuracy and stability,
- Requirements for the visual appearance and surface characteristics,
- Consideration of preferred cross-sections and preferred lengths.

Only structural timber from members of the Überwachungsgemeinschaft Konstruktionsvollholz e.V. may be called KVH®. KVH® is subject to third party control of the additional characteristics.

KVH® is suitable for use in areas where there are no requirements for the appearance quality of the timber used.

In this updated agreement, the KVH-Si class and the KVH-NSi designation are waived.

March 2026

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General requirements

1. KVH® must meet the requirements of the building authorities, in particular the requirements for the declaration of performance and CE marking. Non-finger-jointed KVH® must comply with DIN EN 14081-1¹ in conjunction with DIN 20000-5², finger-jointed KVH® must comply with DIN EN 15497³ in conjunction with DIN 20000-7⁴.
2. KVH® within the meaning of this Agreement are squared timber and boards and planks predominantly subjected to edgewise bending stresses (K) according to the definition of DIN 4074-1⁵.
3. The requirements of this Agreement apply to species spruce, fir, pine, larch and Douglas fir.
4. In the case of visual grading KVH® is graded in accordance with grading standard DIN 4074-1 or ÖNORM 4074-1⁶ In the following, reference is made to DIN 4074-1.
5. As a rule, KVH® corresponds to strength class C24 according to DIN EN 338⁷ (for machine grading C24M). Other strength classes must be agreed separately.
6. The wood is kiln dried in accordance with DIN 68800 - 1⁸, i.e. the wood is dried in a suitable technical system at a temperature $T \geq 55^\circ\text{C}$ for at least 48 hours to a wood moisture content of $18 \leq \%$. This is a prerequisite for the extensive avoidance of preservative treatment.
7. When determining the wood moisture and dimensional accuracy, 50 cm from the end-grain must be maintained. The wood moisture content is determined in accordance with DIN EN 13183-2⁹. If the wood moisture is determined by the resistance measurement method, insulated electrodes must be used, which are driven in at least up to one third of the thickness - a maximum of 40 mm.
8. At the time of delivery, the wood moisture content is $15 \pm 3\%$. The following characteristics as well as dimensional accuracy must be maintained at 15% wood moisture. The goods receipt inspection must be carried out no later than 3 working days after delivery.
9. The requirements of this Agreement, which go beyond the requirements of the building authorities, must be complied with in 95% of the delivered pieces due to unavoidable grading errors and variations of wood moisture within individual cross-sections.
10. The KVH® supplier declares that compliance with the requirements at the point of delivery is ensured by its own inspections.
11. Higher requirements than for KVH® can be agreed upon by supplementary agreements between the customer and the supplier.

Note:

The following applies:

- DIN EN 14081-1 in conjunction with DIN 20000-5,
- DIN EN 15497 in conjunction with DIN 20000-7 and
- ÖNORM 4074-1 can apply instead of DIN 4074-1.

¹ DIN EN 14081-1 "Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements"

² DIN 20000-5: "Application of construction products in structures - Part 5: Strength graded structural timber with rectangular cross section"

³ DIN EN 15497 "Structural finger jointed solid timber - Performance requirements and minimum production requirements"

⁴ DIN 20000-7 "Application of construction products in structures - Part 7: Structural finger jointed solid timber according to DIN EN 15497"

⁵ DIN 4074-1 "Strength grading of wood - Part 1: Coniferous sawn timber"

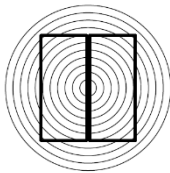
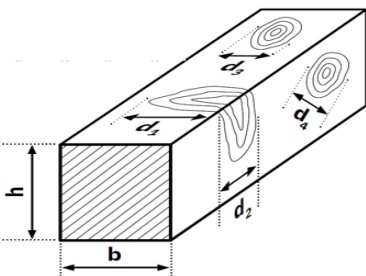
⁶ ÖNORM DIN 4074-1 "Strength grading of wood - Part 1: Coniferous sawn timber"

⁷ DIN EN 338 "Structural timber - Strength classes"

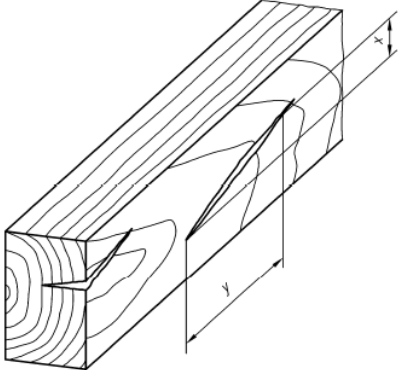
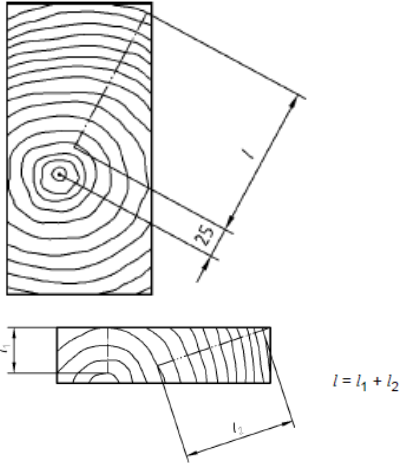
⁸ DIN 68800 - 1 "Wood preservation - Part 1: General"

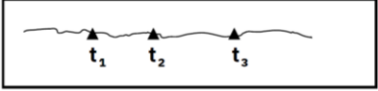
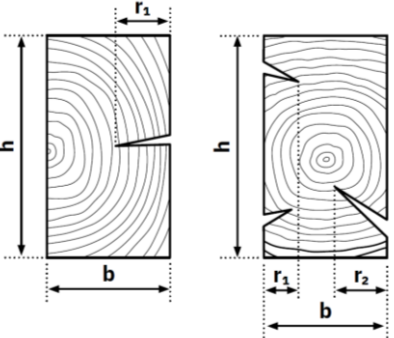
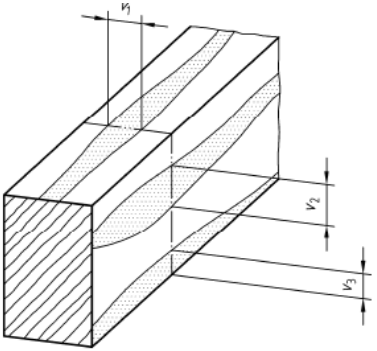
⁹ DIN EN 13183-2 "Moisture content of a piece of sawn timber - Part 2: Estimation by electrical resistance method"

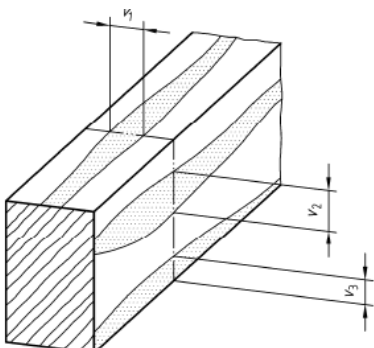
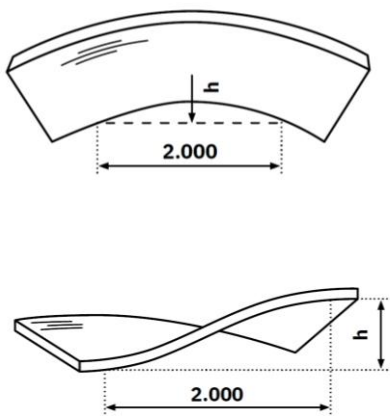
Table 1 Requirements for structural timber KVH® (for C24, C24M and S10)

Characteristic	Requirements for KVH®	Notes
Strength class	C24 or C24M	Other strength classes are to be agreed separately.
Grading standard in the case of visual sorting	DIN 4074-1	Other grading standards are to be agreed separately.
Product standard	Non-finger-jointed KVH®: DIN EN 14081-1 Finger-jointed KVH®: DIN EN 15497	
Moisture content ^{a u}	15 ± 3 %	Kiln dried in accordance with DIN 68800-1.
Cutting scheme	A cut is made according to the principle that, for a log with an ideal growth pattern, the heartwood will be cut through when split down the middle see Figure on the right.	
Wane ^a	≤ 10% of the smaller cross-sectional side	
Dimension conformity of the cross-section ^a	For cross-sectional size ≤10 cm = ±1 mm; >10 cm and ≤ 30 cm = ±1,5 mm	Complies with DIN EN 336 ¹⁰ , dimensional tolerance class 2 The dimensional accuracy for length dimensions must be agreed between the customer and the supplier.
Knot condition ^a	There is no distinction between ingrown and non-ingrown knots.	Determined in accordance with DIN 4074-1.
Knots <i>A</i> ^b	S10: <i>A</i> ≤ 2/5 Not exceeding 70 mm	In the case of machine grading, the knot sizes are not considered Knotholes are equated with knots. Knot bark is considered as part of the knot. The single knot is to be measured as follows. The smallest visible diameter <i>d</i> of the knot is decisive for each individual knot. $A = \max. \left(\frac{d_1}{b}, \frac{d_2}{h}, \frac{d_3}{b}, \frac{d_4}{h} \right)$ 

¹⁰ DIN EN 336 "Structural timber - Sizes, permitted deviations"


Characteristic	Requirements for KVH®	Notes
Fiber deviation ^b <i>F</i>	S10: $F \leq 12\%$	<p>The fiber deviation <i>F</i> is calculated as the deviation <i>x</i> of fibers, related to the gauge length <i>y</i>. Local fiber deviations caused by knots are disregarded.</p> $F = \frac{x}{y} 100$ 
Pith ^b	S10: Permitted	
Annual ring width ^b	<p>S10: ≤ 6 mm (general) S10: ≤ 8 mm for Douglas fir</p>	<p>In the case of timber with a pith <i>t</i>, a range of 25 mm, starting from the pith, is not considered.</p> <p>The average annual ring width applies. Measurements are taken on the line <i>l</i> perpendicular to the annual rings:</p> 
Crack width ^a <i>b</i>	Crack width $b \leq 5\%$	<p>The crack width <i>b</i> refers to the respective cross-sectional side.</p> <p>No restriction on length or number of cracks.</p>
Crack depth <i>R</i> — Shrinkage cracks ^b	S10: $R \leq \frac{1}{2}$	Cracks up to 1/4 of the length of the wood, up to a maximum of 1 m, are not considered.

Characteristic	Requirements for KVH®	Notes
<p>— Lightning cracks, ring cracks ^a</p>	<p>Not permitted</p>	<p>The crack depth is to be determined with a feeler gauge of 0.1 mm thickness.</p> <p>The crack depth r of a crack is the mean value of the three measurements t_1, t_2 and t_3. Determination of crack depth r:</p> $r = \frac{t_1+t_2+t_3}{3}$  <p>Determination of crack depth R:</p> $R = \frac{r_1}{b} \text{ or } R = \frac{r_1+r_2}{b}$ 
<p>Compression wood V^b</p>	<p>S10: $V \leq 2/5$</p>	<p>The decisive factor is the location of the maximum extension.</p> <p>Measurements are taken on the surface of the sawn timber, namely at the maximum expansion perpendicular to the longitudinal axis.</p> $V = \frac{V_1 + V_2 + V_3}{2(b + h)}$ 
<p>Defects due to insect attack ^a</p>	<p>Wormholes ≤ 2 mm Diameter permissible</p>	<p>The size of the wormholes recognizable on the surface is decisive.</p>
<p>Resin pockets ^a</p>	<p>No requirements</p>	

Characteristic	Requirements for KVH®	Notes
<p>Discoloration</p> <ul style="list-style-type: none"> - Blue stain^a - Nail resistant brown and red streaks^b - Brown or white rot^a 	<p>Permitted</p> <p>S10: $V \leq 2/5$</p> <p>Not permitted</p>	<p>The decisive factor is the location of the maximum extension. Measurements are taken on the surface of the sawn timber, namely at the maximum expansion perpendicular to the longitudinal axis.</p> $V = \frac{V_1 + V_2 + V_3}{2(b + h)}$ 
<p>Warping</p> <ul style="list-style-type: none"> - Longitudinal warping^a - Twisting^a 	<ul style="list-style-type: none"> - $h \leq 8$ mm based on a measuring length of 2,000 mm - $h \leq 1$ mm per 25 mm of height, see right picture 	<p>Twist and longitudinal warping are calculated as arrow height h at the point of greatest deformation, related to 2,000 mm gauge length</p> 
<p>End cut</p>	<p>Cut at right angles</p>	
<p>Surface finish^a</p>	<p>Levelled and chamfered</p>	<p>In accordance with this Agreement, all four sides of a cross-section are at least striped by the planer during leveling.</p>
<p>^a The requirements for these characteristics must be met regardless of the sorting standard or sorting class.</p> <p>^b For products other than squared timber and boards and planks according to 4074-1 predominantly subjected to edgewise bending (K) as well as mechanical or other visual grading standards, the limit values of the respective sorting rule apply.</p>		

Marking


a) **CE-Marking for KVH® without finger-jointed connection in accordance with DIN EN 14081-1**

	
Company xy 11 001-2014/02/05	
EN 14081-1:2011 Strength graded solid timber C24 M	
Strength class	C 24M
Grading	Dry graded
Reaction to fire	D-s2, d0
Durability	Against wood-destroying fungi DC 5

<i>CE-Mark</i>
<i>Manufacturer ID</i>
<i>Year of the manufacturer's initial type testing</i>
<i>Number of Declaration of Performance</i>
<i>Dated reference to the standard</i>
<i>Name of the product type</i>
<i>Essential characteristics</i>

For wood species other than spruce, the type of wood must also be indicated in the CE mark shown above.
 For timber that is chemically protected as a preventive measure, the abbreviation "PT" must be indicated.

b) **CE-Marking for KVH® with finger-jointed connection in accordance with DIN EN 15497**

	
Company xy 15 002- 2015/07/14	
EN 15497:2014 Structural finger jointed timber C24	
Strength class	C 24
Reaction to fire	D-s2, d0
Formaldehyde class	E1
Durability of bonding strength	
Species	Spruce
Adhesive	MUF, EN 301 I70 FJ 0.1S
Durability	Against wood-destroying fungi DC 5

<i>Manufacturer ID</i>
<i>Year of the manufacturer's initial type testing</i>
<i>Number of Declaration of Performance</i>
<i>Dated reference to the norm</i>
<i>Name of the product type</i>
<i>Dated reference to standard</i>
<i>Name of the product type</i>
<i>Essential characteristics</i>

The code 'PT' must be specified for timber treated with preservative treatment.

c) Naming and marking KVH®

If structural timber by members of the Überwachungsgemeinschaft KVH e.V. is subjected to additional external monitoring in accordance with its statutes, it may be named KVH® and marked with the KVH® monitoring mark.



Preferred dimensions and definition of assortments

Table 2 Preferred cross-sections KVH® made of spruce/fir (area of application: house construction) of strength class C24/C24M

Width [mm]	Height [mm]							
	100	120	140	160	180	200	220	240
60								
80								
100								
120								
140								

- Cross sections up to 280 mm in height are possible on request.
 - KVH® cross-sections with a width of more than 140 mm were dispensed for reasons of technical drying. For widths of more than 140mm, the use of laminated beams or glulam is recommended.
 - Cross-sections for other types of wood (e.g. pine, Douglas fir, larch) on request.
 - Strength classes other than C24 / C24M on request

Table 3 Preferred/storage lengths of KVH®

Cross-sections	Preferred lengths
All cross-sections	5 m oder 13 m

Table 4 Product type definitions

Standard	Package consisting of one cross-section and one quality in a defined packaging unit
Single bars	Single pieces or package unit consisting of exact number of pieces from standard product type
Uniform lengths	Package in a uniform length, e.g. 6 m, 7 m, 8 m, 8.5 m, 9 m, with uniform dimensions and uniform quality.
List	Optimised list of various cross-sections in multiple lengths, with or without cut length by agreement