SINTEF Technical Approval

TG 2535

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Amended:
Valid until 01.10.2028
Provided listed on
www.sintefcertification.no

SINTEF confirms that

K-Stud

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

InnTre Kjeldstad AS
Bogavegen 7
7725 Steinkjer
Norway
www.Inntre.no

2. Product description

K-stud is a load-bearing rectangular glued laminated timber stud made of boards from Nordic spruce or pine.

The studs produced by InnTre Kjeldstad AS are made with 17–20 mm thick and 2 400–5 700 mm long finger jointed boards. Moisture resistant PRF adhesive is used for finger jointing and EPI adhesive for gluing the boards together.

Studs produced by Norsk Limtre AS have 17–25 mm thick boards in full length without finger joints. The boards are glued together with moisture resistant MUF adhesive.

Inner boards are graded as G4-2 according to EN 1611-1.

K-Stud is produced with standard thickness 36 mm and 45 mm, and in standard depths 68, 98, 148 and 198 mm, see figure 1.

The studs are delivered in 2.4 m and 4.9 m standard lengths. Studs with length 4.9 m can also be used as sills. The studs are delivered with holes for pipe penetrations, placed 300 mm from each end as shown in figure 2.

The studs are delivered with a moisture content of 12–16 %, in packages wrapped in plastic. Measure tolerances at delivery:

- Cross section: ± 1 mm
- Twist: 0,5 mm per 25 mm width
- Edge bow: 2,5 mm measured over 2 m
- Flatwise bow: 4 mm measured over 2 m

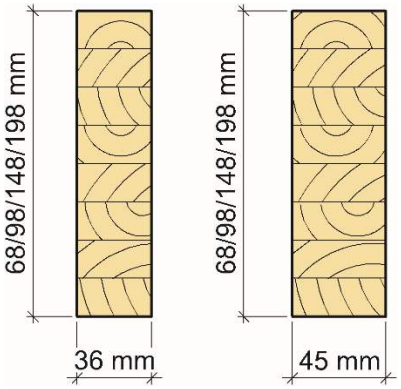


Fig. 1
K-Stud. Standard dimensions.

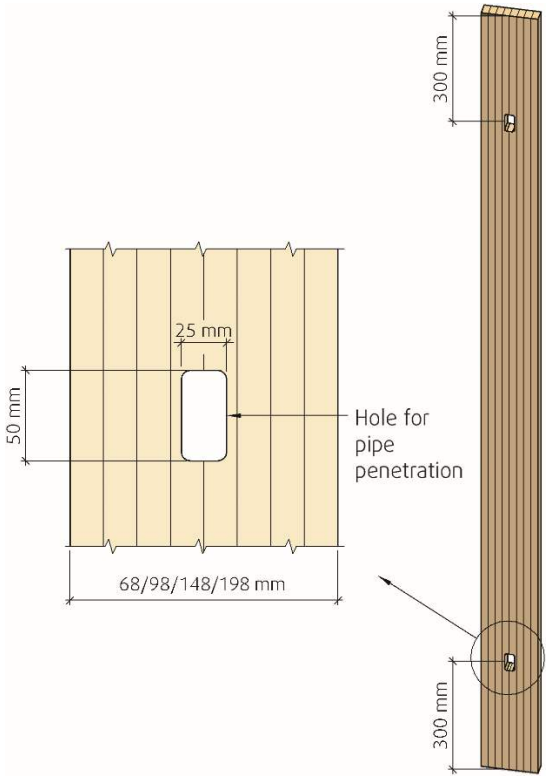


Fig. 2
Shape and position of holes for pipe penetrations

3. Fields of application

K-stud is designed for use as wall studs and sills in timber house constructions in service class 1 and 2 according to EN 1995-1-1.

K-Stud can be used in buildings in hazard class 1 to 6 in fire class 1 and 2. See cl. 6.3 for special conditions for use and installation.

4. Properties

4.1 Strength and stiffness

Characteristic strength and stiffness properties for calculation of loadbearing performance are shown in Table 1.

Table 1
Characteristic strength, stiffness modules and density for K-Stud

Property	Test-method	Control limit[1)]	Unit
Bending strength, $f_{m,k}$	EN 408	24,0	N/mm^2
Tensile strength - in length of stud, $f_{t,0,k}$ - perpendicular on fibres, $f_{t,90,k}$	-	11,0 0,4	N/mm^2 N/mm^2
Compression strength - in length of stud, $f_{c,0,k}$ - perpendicular on fibres, $f_{c,90k}$	-	18,0 4,8	N/mm^2 N/mm^2
Shear strength, $f_{v,k}$	EN 14080	3,4	N/mm^2
Stiffness for calculation of stability - Modulus of elasticity in bending, $E_{0,k}$	EN 408	6 000	N/mm^2
Stiffness for calculation of deformations - Modulus of elasticity in bending, $E_{0,m}$	EN 408[1)]	9 000	N/mm^2
Density - characteristic, ρ_k - mean, ρ_{mid}	EN 408 EN 408	400 450	kg/m^3 kg/m^3

1) The control limit indicates the lowest value for the manufacturer's internal control and supervisory control testing.

4.2 Reaction to fire

K-Stud is not classified according to EN 13501-1.

4.3 Sound insulation

Constructions with K-Stud can be regarded to have equivalent sound insulation properties as constructions with solid wood studs of the same weight.

4.4 Thermal insulation

Design thermal conductivity λ_d for the wood in K-Stud is 0,13 W/(mK) according to EN ISO 10456.

4.5 Durability

For the fields of application given in cl. 3 are constructions with K-Stud regarded to have the same durability as equivalent constructions with solid wood studs.

5. Environmental aspects

5.1 Chemicals hazardous to health and environment

K-Stud contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

5.2 Effect on indoor environment

K-Stud has been assessed according to SINTEF Technical Approval – Requirements for health and environmental properties, version 09.02.2022. The product is not regarded as emitting any particles, gases or radiation that have a perceptible impact on the indoor climate, or to have any significant impact on health. The product satisfies requirements in BREEAM-NOR v6.0 Emissions from construction products according to Hea 02 Indoor air quality.

5.3 Waste treatment/recycling

For disposal the studs shall be sorted as wood material. The studs must be delivered to an authorized waste treatment plant for energy recovery.

5.4 Environmental declaration

An environmental declaration (EPD) according to EN 15804 has been worked out for K-Stud. For full environmental declaration see EPD no. NEPD-4256-3489-NO, http://epd-norge.no/.

6. Special conditions for use and installation

6.1 Structural design

Structural design of K-Stud shall be done according to EN 1995-1-1, using the characteristic strength and stiffness properties shown in Table 1. The same modification factors as for solid timber and glued laminated timber are applied.

For design of walls in low rise houses can recommendations for structural timber with strength class C18 given in Building Research Design Guide 523.251 *Timber frame walls. Structural design and execution* be applied.

6.2 Transport and storage

During transport and storage, the studs shall be protected against precipitation and free water.

6.3 Safety in case of fire

K-Stud must be covered for exposure to fire so that it is not part of a visible surface in the fire compartment and does not make a contribution to fire development.

7. Factory production control

K-Stud is produced by:

- InnTre Kjeldstad AS, Steinkjer, Norway
- Norsk Limtre AS, Mosvik, Norway

The holder of the approval is responsible for the factory production control to ensure that K-studs are produced in accordance with the preconditions applying to this approval.

The manufacturing of K-studs and the manufacturers' systems for factory production control (FPC) are subject to continuous surveillance in accordance with the contract regarding SINTEF Technical Approval.

8. Basis for the approval

The evaluation of K-Stud is based on reports owned by the holder of the approval.

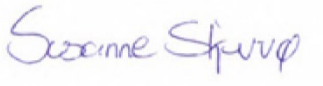
9. Marking

Every K-Stud shall be marked with the type of stud and a production number in addition to the name of the manufacturer. The approval mark for SINTEF Technical Approval TG 2535 may also be used.

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402.

for SINTEF



Susanne Skjervø
Approval Manager