THEURL

AUSTRIAN PREMIUM TIMBER®

GLUED LAMINATED TIMBER DESIGN AIDS

7-2023

APPLICATION GUIDELINES

The general preliminary diagrams and tables for selected cross-sections are used for quick (pre-)dimensioning of glued laminated timber beams.

The design aids are based on the latest calculation standards for timber construction **(Eurocode EN 1995 / national Austrian appendix B 1995).**

The documents were created for the common **material grades – GL 24h, GL 28h/c, GL 30c, GL 32h/c.**

A distinction is also made between the standard usage classes, i.e. the locations in or at which the glued laminated timber beams are installed.

Use class 1: Indoors (in heated buildings)

Use class 2: Covered, open components

Use class 3: Structures exposed to the weather

The use of these diagrams and tables cannot replace a static calculation!

APPLICATION EXAMPLE

Given:

Constant load	g = 1.5 KN/m²	
Applied load	p = 2.0 KN/m²	
Glulam beam:	Material GL 24h/c	
	Beam width 12 cm	
Span	L = 5.0 m	(single-span beam)
Beam spacing	e = 0.8 m	use class 1

Required: a) Minimum beam height without deformation limitation

q = (1.5 + 2)*0.8 = 2.8 KN/m

q/b = 2.8 / 0.12 = 23.3 KN/m² ... Input parameters for diagram

Read: h/L = 0.045

Required beam height: h = 0.045*5 m = 0.225 m = **22.5 cm**

b) Beam height for long-term deflection L/500

L = 5.0 m : L/500 = 1.0 cm

q/b = 2.8 / 0.12 = 23.3 KN/m² ... Input parameters for diagram

Read: h/L = 0.0625

Required beam height: h = 0.0625*5 m = 0.31 m = **31.0 cm**

c) Beam height for short-term deflection L/500

L = 5.0 m : L/500 = 1.0 cm

q/b = 2.8 / 0.12 = 23.3 KN/m² ... Input parameters for diagram

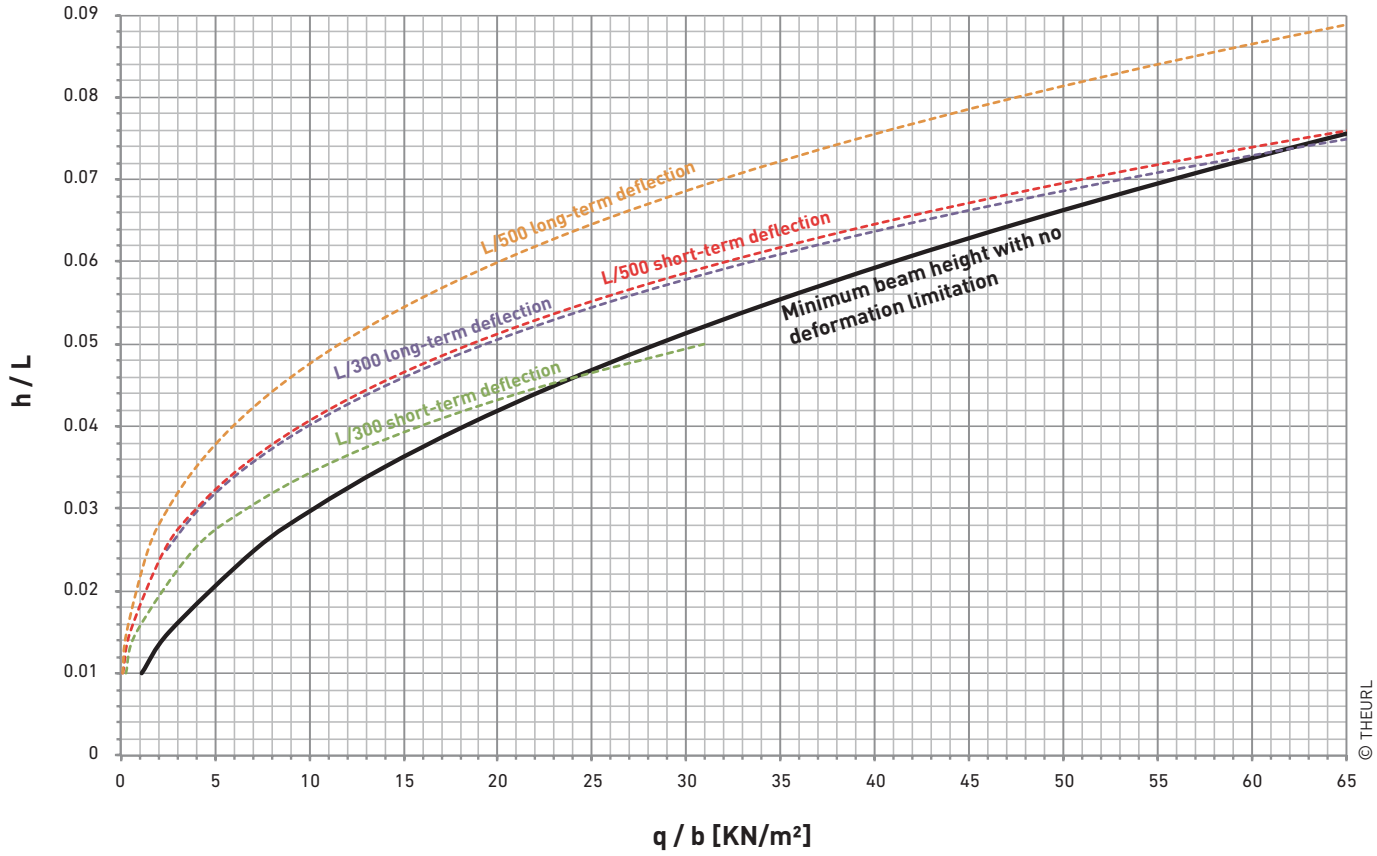
Read: h/L = 0.054

Required beam height: h = 0.054*5 m = 0.27 m = **27.0 cm**

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

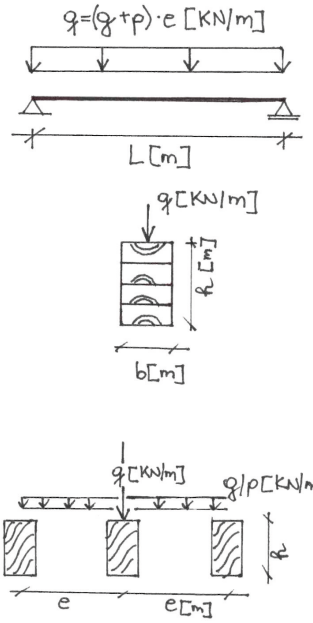
Characteristic loads, without safety factors

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 24h Use Class 1

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.2	2.4	1.8	1.4	1.2	1.0	0.8
		L/300 short	3.2	2.4	1.6	1.1	0.8	0.6	0.5
		L/300 long	2.3	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 short	2.3	1.4	1.0	0.7	0.5	0.4	0.3
		L/500 long	1.4	0.9	0.6	0.4	0.3	0.2	0.2
120	160	*	3.9	2.9	2.2	1.7	1.4	1.2	1.0
		L/300 short	3.9	2.8	1.9	1.3	1.0	0.7	0.6
		L/300 long	2.8	1.8	1.2	0.8	0.6	0.5	0.4
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
100	200	*	5.1	3.7	2.8	2.2	1.8	1.5	1.3
		L/300 short	5.1	3.7	2.8	2.2	1.6	1.2	0.9
		L/300 long	4.6	2.9	1.9	1.4	1.0	0.7	0.6
		L/500 short	4.4	2.8	1.9	1.3	1.0	0.7	0.5
		L/500 long	2.7	1.7	1.2	0.8	0.6	0.4	0.3
120	200	*	6.1	4.5	3.4	2.7	2.2	1.8	1.5
		L/300 short	6.1	4.5	3.4	2.6	1.9	1.4	1.1
		L/300 long	5.5	3.5	2.3	1.6	1.2	0.9	0.7
		L/500 short	5.3	3.3	2.2	1.6	1.1	0.9	0.7
		L/500 long	3.3	2.1	1.4	1.0	0.7	0.5	0.4
140	200	*	7.1	5.2	4.0	3.1	2.5	2.1	1.8
		L/300 short	7.1	5.2	4.0	3.0	2.2	1.7	1.3
		L/300 long	6.4	4.0	2.7	1.9	1.4	1.0	0.8
		L/500 short	6.2	3.9	2.6	1.8	1.3	1.0	0.8
		L/500 long	3.8	2.4	1.6	1.1	0.8	0.6	0.5
160	200	*	8.1	5.9	4.6	3.6	2.9	2.4	2.0
		L/300 short	8.1	5.9	4.6	3.5	2.5	1.9	1.5
		L/300 long	7.3	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 short	7.0	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	4.4	2.8	1.9	1.3	1.0	0.7	0.5
120	240	*	8.7	6.4	4.9	3.9	3.1	2.6	2.2
		L/300 short	8.7	6.4	4.9	3.9	3.1	2.5	1.9
		L/300 long	8.7	6.0	4.0	2.8	2.1	1.5	1.2
		L/500 short	8.7	5.7	3.8	2.7	2.0	1.5	1.1
		L/500 long	5.7	3.6	2.4	1.7	1.2	0.9	0.7
140	240	*	10.2	7.5	5.7	4.5	3.7	3.0	2.5
		L/300 short	10.2	7.5	5.7	4.6	3.6	2.9	2.2
		L/300 long	10.2	7.0	4.7	3.3	2.4	1.8	1.4
		L/500 short	10.2	6.7	4.5	3.2	2.3	1.7	1.3
		L/500 long	6.7	4.2	2.8	2.0	1.4	1.1	0.8
160	240	*	11.7	8.6	6.6	5.2	4.2	3.5	2.9
		L/300 short	11.7	8.6	6.6	5.3	4.2	3.4	2.6
		L/300 long	11.6	8.0	5.3	3.8	2.7	2.1	1.6
		L/500 short	11.6	7.7	5.1	3.6	2.6	2.0	1.5
		L/500 long	7.6	4.8	3.2	2.3	1.6	1.2	1.0



Legend:

*) ... without deflection limitation

short ... short-term deflection

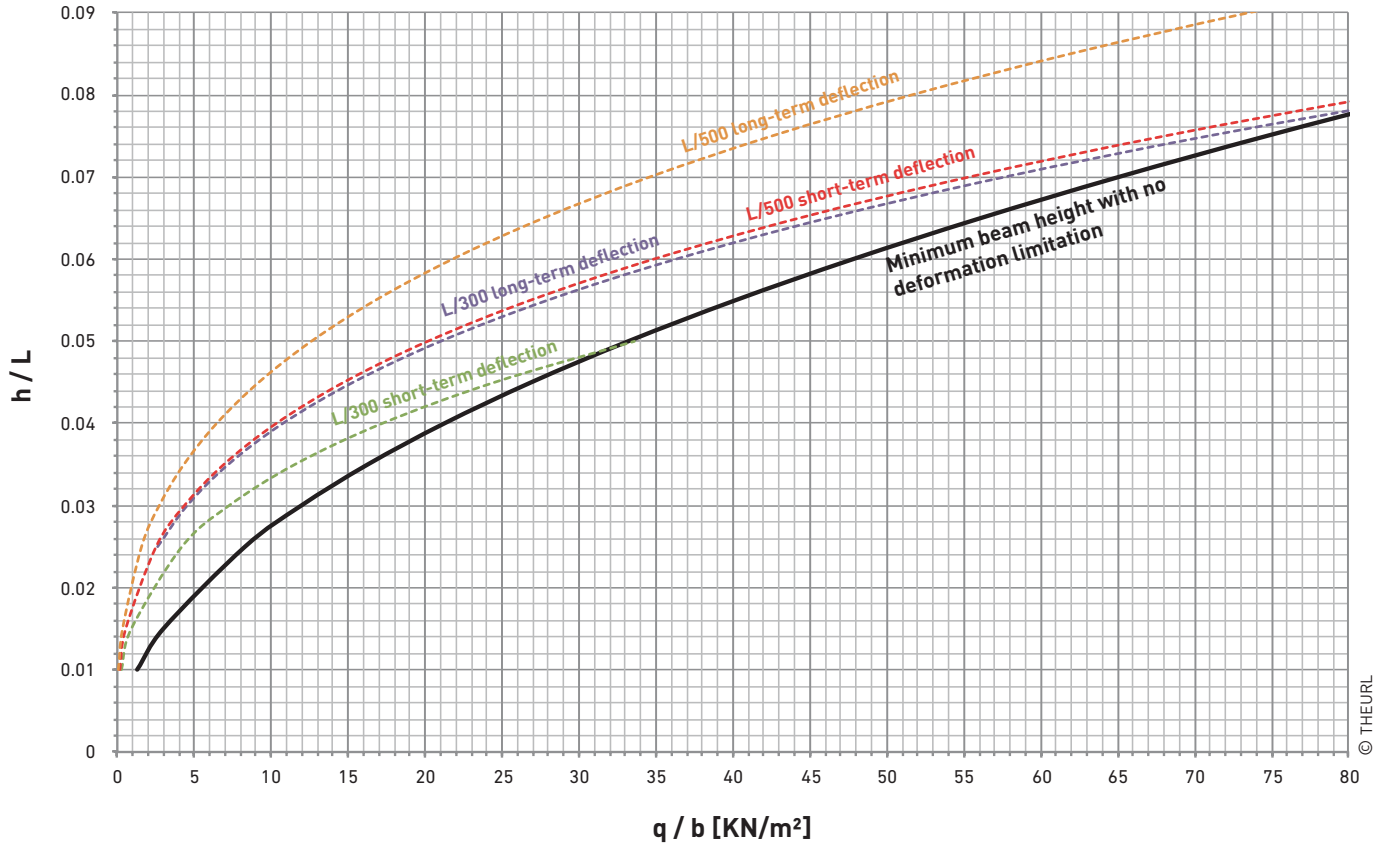
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

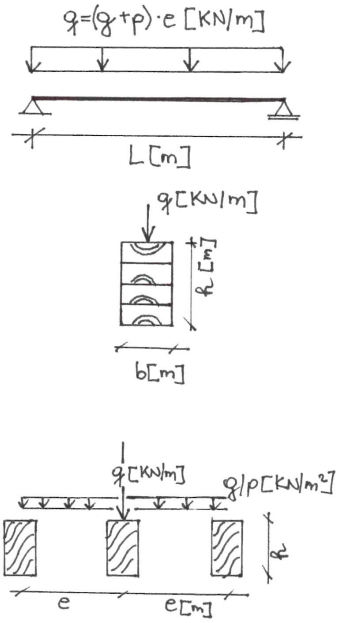
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 28h/c use class 1

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.8	2.8	2.1	1.7	1.4	1.1	0.9
		L/300 short	3.8	2.6	1.7	1.2	0.9	0.7	0.5
		L/300 long	2.5	1.6	1.1	0.8	0.6	0.4	0.3
		L/500 short	2.4	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 long	1.5	1.0	0.6	0.5	0.3	0.2	0.2
120	160	*	4.5	3.3	2.5	2.0	1.6	1.3	1.1
		L/300 short	4.5	3.1	2.1	1.4	1.1	0.8	0.6
		L/300 long	3.1	1.9	1.3	0.9	0.7	0.5	0.4
		L/500 short	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 long	1.8	1.2	0.8	0.5	0.4	0.3	0.2
100	200	*	5.9	4.3	3.3	2.6	2.1	1.8	1.5
		L/300 short	5.9	4.3	3.4	2.4	1.7	1.3	1.0
		L/300 long	5.0	3.1	2.1	1.5	1.1	0.8	0.6
		L/500 short	4.8	3.0	2.0	1.4	1.0	0.8	0.6
		L/500 long	3.0	1.9	1.3	0.9	0.6	0.5	0.4
120	200	*	7.1	5.2	4.0	3.1	2.5	2.1	1.8
		L/300 short	7.1	5.2	4.0	2.8	2.1	1.6	1.2
		L/300 long	6.0	3.8	2.5	1.8	1.3	1.0	0.7
		L/500 short	5.7	3.6	2.4	1.7	1.2	0.9	0.7
		L/500 long	3.6	2.3	1.5	1.1	0.8	0.6	0.4
140	200	*	8.3	6.1	4.6	3.7	3.0	2.5	2.1
		L/300 short	8.3	6.1	4.6	3.3	2.4	1.8	1.4
		L/300 long	7.0	4.4	2.9	2.1	1.5	1.1	0.9
		L/500 short	6.7	4.2	2.8	2.0	1.4	1.1	0.8
		L/500 long	4.2	2.6	1.8	1.2	0.9	0.7	0.5
160	200	*	9.4	6.9	5.3	4.2	3.4	2.8	2.4
		L/300 short	9.4	6.9	5.3	3.8	2.8	2.1	1.6
		L/300 long	8.0	5.0	3.4	2.4	1.7	1.3	1.0
		L/500 short	7.6	4.8	3.2	2.3	1.7	1.2	1.0
		L/500 long	4.8	3.0	2.0	1.4	1.0	0.8	0.6
120	240	*	10.2	7.5	5.7	4.5	3.7	3.0	2.5
		L/300 short	10.2	7.5	5.7	4.5	3.6	2.7	2.1
		L/300 long	10.2	6.5	4.4	3.1	2.2	1.7	1.3
		L/500 short	9.9	6.2	4.2	2.9	2.1	1.6	1.2
		L/500 long	6.2	3.9	2.6	1.8	1.3	1.0	0.8
140	240	*	11.9	8.7	6.7	5.3	4.3	3.5	3.0
		L/300 short	11.9	8.7	6.7	5.3	4.2	3.1	2.4
		L/300 long	11.9	7.6	5.1	3.6	2.6	2.0	1.5
		L/500 short	11.6	7.3	4.9	3.4	2.5	1.9	1.4
		L/500 long	7.2	4.6	3.0	2.1	1.6	1.2	0.9
160	240	*	13.6	10.0	7.6	6.0	4.9	4.0	3.4
		L/300 short	13.6	9.9	7.6	6.0	4.8	3.6	2.8
		L/300 long	13.6	8.7	5.8	4.1	3.0	2.2	1.7
		L/500 short	13.2	8.3	5.6	3.9	2.9	2.1	1.7
		L/500 long	8.3	5.2	3.5	2.4	1.8	1.3	1.0



Legend:

*) ... without deflection limitation

short ... short-term deflection

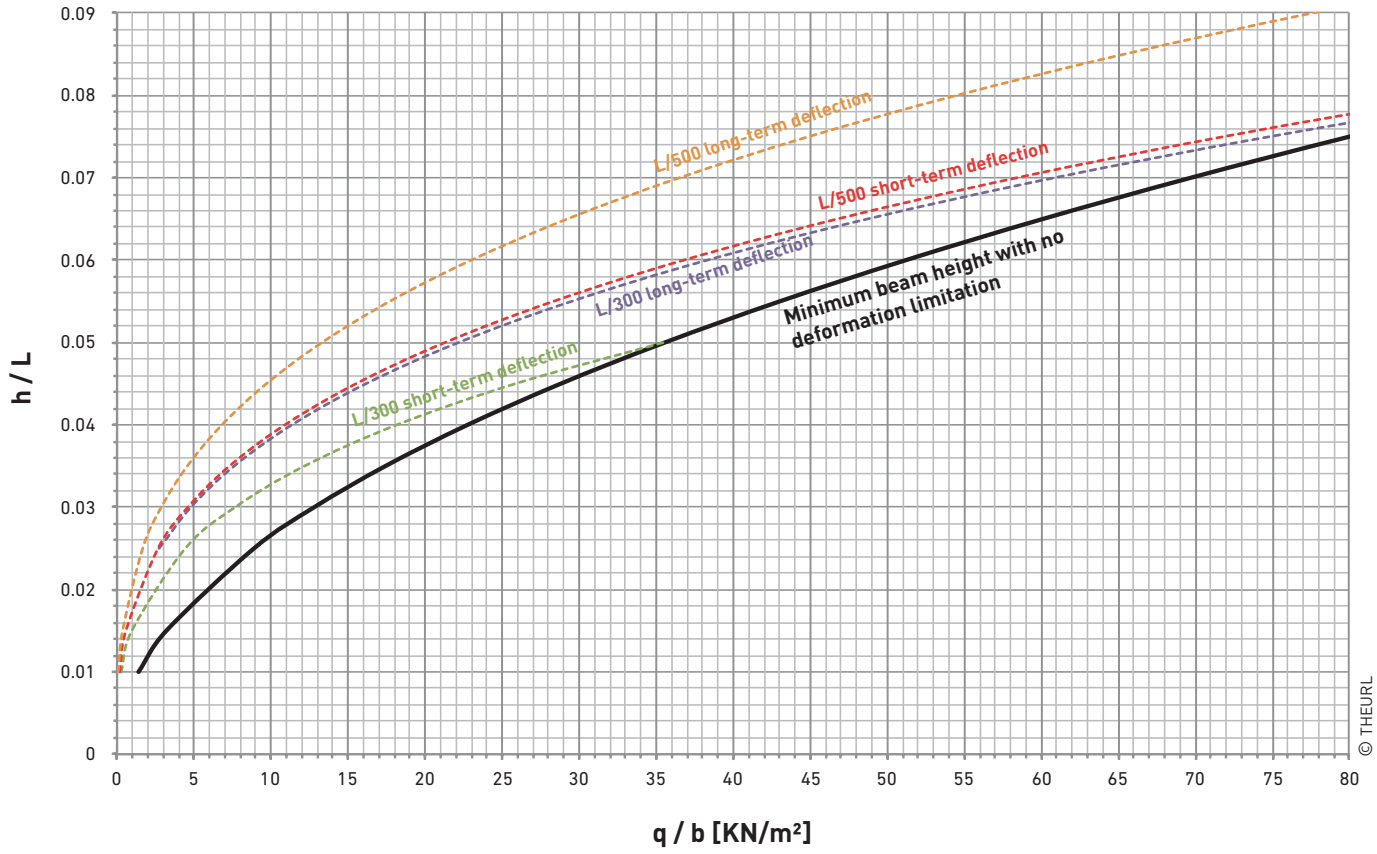
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
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q ... Total load [KN/m]

Characteristic loads, without safety factors

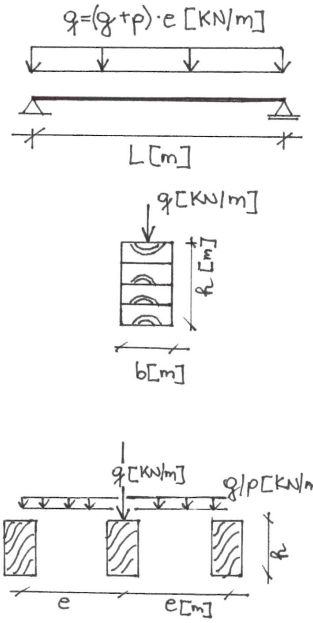
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 30c Use Class 1

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	4.0	3.0	2.3	1.8	1.5	1.2	1.0
		L/300 short	4.0	2.7	1.8	1.3	0.9	0.7	0.5
		L/300 long	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 short	2.6	1.6	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.6	1.0	0.7	0.5	0.3	0.3	0.2
120	160	*	4.9	3.6	2.7	2.2	1.7	1.4	1.2
		L/300 short	4.9	3.3	2.2	1.5	1.1	0.8	0.6
		L/300 long	3.2	2.0	1.4	1.0	0.7	0.5	0.4
		L/500 short	3.1	2.0	1.3	0.9	0.7	0.5	0.4
		L/500 long	1.9	1.2	0.8	0.6	0.4	0.3	0.2
100	200	*	6.3	4.6	3.6	2.8	2.3	1.9	1.6
		L/300 short	6.3	4.6	3.5	2.5	1.8	1.4	1.1
		L/300 long	5.3	3.3	2.2	1.6	1.1	0.9	0.7
		L/500 short	5.0	3.2	2.1	1.5	1.1	0.8	0.6
		L/500 long	3.2	2.0	1.3	0.9	0.7	0.5	0.4
120	200	*	7.6	5.6	4.3	3.4	2.7	2.3	1.9
		L/300 short	7.6	5.6	4.3	3.0	2.2	1.6	1.3
		L/300 long	6.3	4.0	2.7	1.9	1.4	1.0	0.8
		L/500 short	6.1	3.8	2.6	1.8	1.3	1.0	0.8
		L/500 long	3.8	2.4	1.6	1.1	0.8	0.6	0.5
140	200	*	8.8	6.5	5.0	3.9	3.2	2.6	2.2
		L/300 short	8.8	6.5	5.0	3.5	2.5	1.9	1.5
		L/300 long	7.4	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 short	7.1	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	4.4	2.8	1.9	1.3	1.0	0.7	0.6
160	200	*	10.1	7.4	5.7	4.5	3.6	3.0	2.5
		L/300 short	10.1	7.4	5.7	4.0	2.9	2.2	1.7
		L/300 long	8.4	5.3	3.5	2.5	1.8	1.4	1.1
		L/500 short	8.1	5.1	3.4	2.4	1.7	1.3	1.0
		L/500 long	5.0	3.2	2.1	1.5	1.1	0.8	0.6
120	240	*	10.9	8.0	6.1	4.9	3.9	3.2	2.7
		L/300 short	10.9	8.0	6.1	4.9	3.8	2.8	2.2
		L/300 long	10.9	6.9	4.6	3.2	2.4	1.8	1.4
		L/500 short	10.5	6.6	4.4	3.1	2.3	1.7	1.3
		L/500 long	6.5	4.1	2.8	1.9	1.4	1.1	0.8
140	240	*	12.7	9.4	7.2	5.7	4.6	3.8	3.2
		L/300 short	12.7	9.3	7.1	5.7	4.4	3.3	2.5
		L/300 long	12.7	8.0	5.4	3.8	2.7	2.1	1.6
		L/500 short	12.2	7.7	5.1	3.6	2.6	2.0	1.5
		L/500 long	7.6	4.8	3.2	2.3	1.6	1.2	1.0
160	240	*	14.6	10.7	8.2	6.5	5.2	4.3	3.6
		L/300 short	14.5	10.7	8.1	6.5	5.0	3.8	2.9
		L/300 long	14.5	9.1	6.1	4.3	3.1	2.4	1.8
		L/500 short	13.9	8.8	5.9	4.1	3.0	2.3	1.7
		L/500 long	8.7	5.5	3.7	2.6	1.9	1.4	1.1



Legend:

*) ... without deflection limitation

short ... short-term deflection

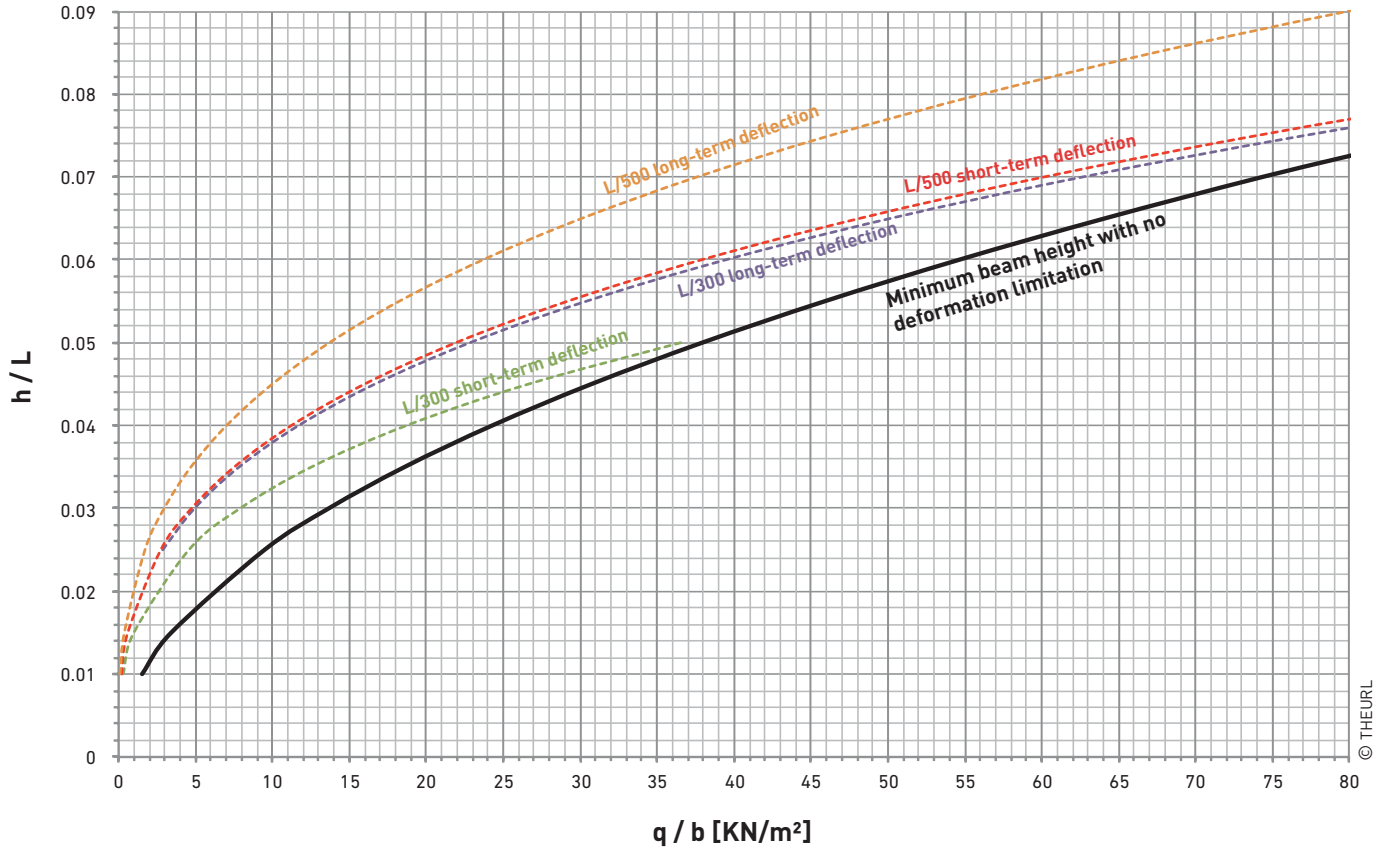
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

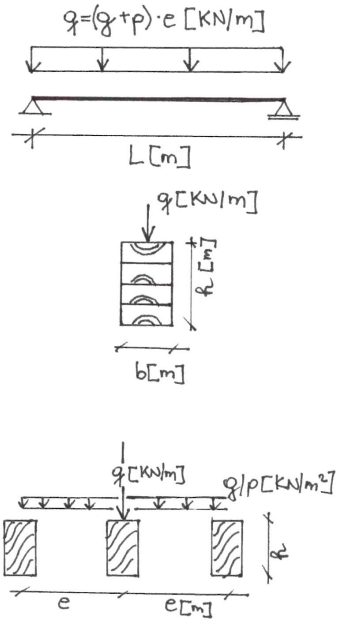
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 32h/c use class 1

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	4.3	3.2	2.4	1.9	1.6	1.3	1.1
		L/300 short	4.3	2.8	1.9	1.3	1.0	0.7	0.6
		L/300 long	2.8	1.8	1.2	0.8	0.6	0.5	0.3
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
120	160	*	5.2	3.8	2.9	2.3	1.9	1.5	1.3
		L/300 short	5.2	3.4	2.3	1.6	1.2	0.9	0.7
		L/300 long	3.3	2.1	1.4	1.0	0.7	0.5	0.4
		L/500 short	3.2	2.0	1.4	1.0	0.7	0.5	0.4
		L/500 long	2.0	1.3	0.8	0.6	0.4	0.3	0.3
100	200	*	6.7	5.0	3.8	3.0	2.4	2.0	1.7
		L/300 short	6.7	5.0	3.7	2.6	1.9	1.4	1.1
		L/300 long	5.5	3.4	2.3	1.6	1.2	0.9	0.7
		L/500 short	5.2	3.3	2.2	1.6	1.1	0.8	0.7
		L/500 long	3.3	2.1	1.4	1.0	0.7	0.5	0.4
120	200	*	8.1	5.9	4.6	3.6	2.9	2.4	2.0
		L/300 short	8.0	5.9	4.4	3.1	2.3	1.7	1.3
		L/300 long	6.5	4.1	2.8	1.9	1.4	1.1	0.8
		L/500 short	6.3	4.0	2.6	1.9	1.4	1.0	0.8
		L/500 long	3.9	2.5	1.7	1.2	0.8	0.6	0.5
140	200	*	9.4	6.9	5.3	4.2	3.4	2.8	2.4
		L/300 short	9.4	6.9	5.2	3.6	2.6	2.0	1.5
		L/300 long	7.6	4.8	3.2	2.3	1.6	1.2	1.0
		L/500 short	7.3	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 long	4.6	2.9	1.9	1.4	1.0	0.7	0.6
160	200	*	10.8	7.9	6.1	4.8	3.9	3.2	2.7
		L/300 short	10.7	7.9	5.9	4.1	3.0	2.3	1.7
		L/300 long	8.7	5.5	3.7	2.6	1.9	1.4	1.1
		L/500 short	8.4	5.3	3.5	2.5	1.8	1.4	1.0
		L/500 long	5.2	3.3	2.2	1.6	1.1	0.8	0.7
120	240	*	11.3	8.6	6.6	5.2	4.2	3.5	2.9
		L/300 short	11.3	8.6	6.6	5.2	3.9	2.9	2.3
		L/300 long	11.3	7.1	4.8	3.3	2.4	1.8	1.4
		L/500 short	10.9	6.8	4.6	3.2	2.3	1.8	1.4
		L/500 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8
140	240	*	13.2	10.0	7.6	6.0	4.9	4.0	3.4
		L/300 short	13.2	10.0	7.7	6.1	4.6	3.4	2.6
		L/300 long	13.2	8.3	5.6	3.9	2.8	2.1	1.6
		L/500 short	12.7	8.0	5.3	3.8	2.7	2.1	1.6
		L/500 long	7.9	5.0	3.3	2.3	1.7	1.3	1.0
160	240	*	15.1	11.4	8.7	6.9	5.6	4.6	3.9
		L/300 short	15.1	11.5	8.8	6.9	5.2	3.9	3.0
		L/300 long	15.1	9.5	6.4	4.5	3.3	2.4	1.9
		L/500 short	14.5	9.1	6.1	4.3	3.1	2.3	1.8
		L/500 long	9.0	5.7	3.8	2.7	2.0	1.5	1.1



Legend:

*) ... without deflection limitation

short ... short-term deflection

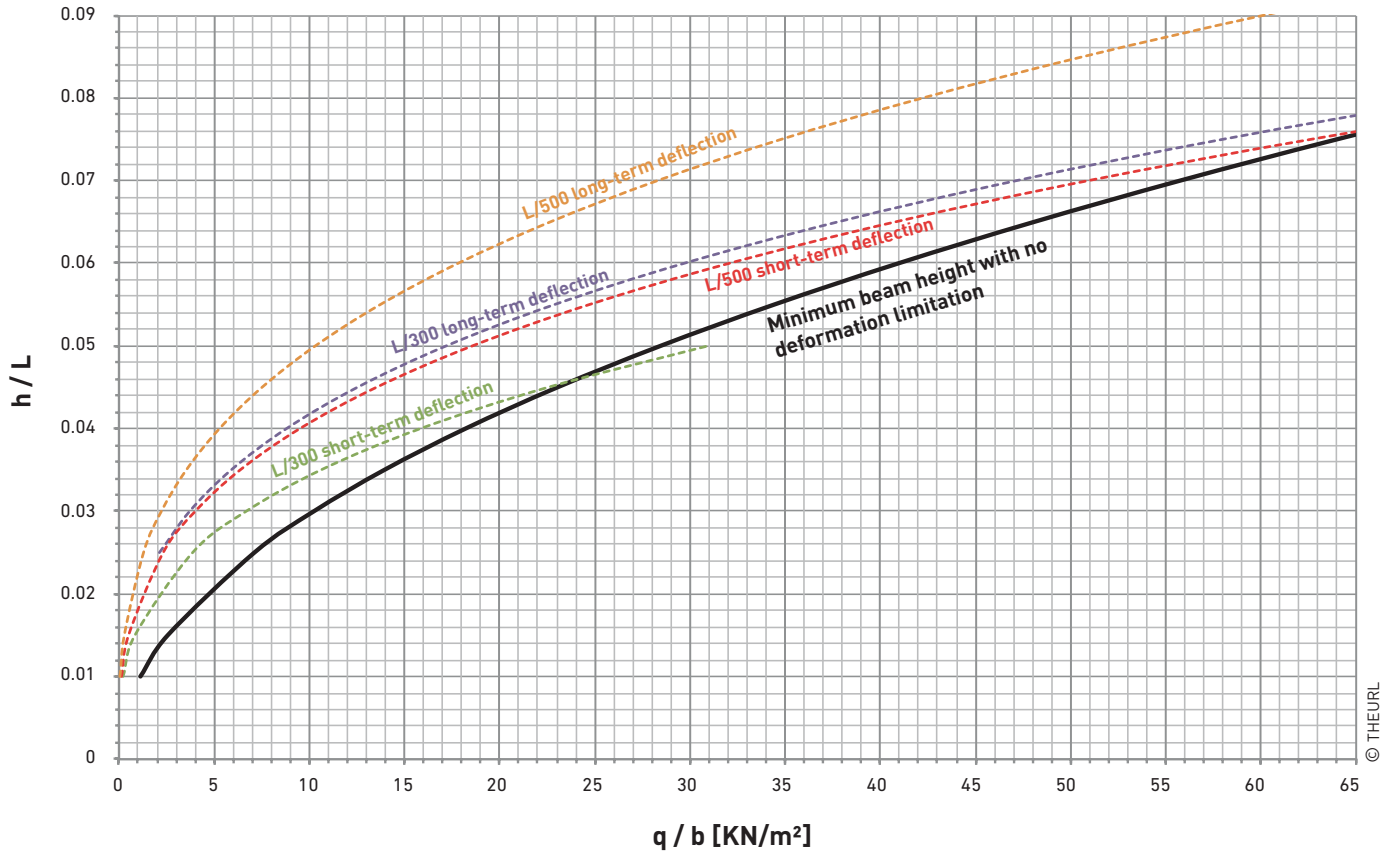
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

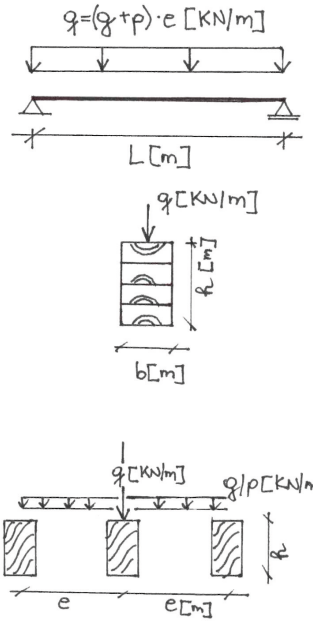
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 24h Use Class 2

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.2	2.4	1.8	1.4	1.2	1.0	0.8
		L/300 short	3.2	2.4	1.6	1.1	0.8	0.6	0.5
		L/300 long	2.1	1.3	0.9	0.6	0.5	0.3	0.3
		L/500 short	2.3	1.4	1.0	0.7	0.5	0.4	0.3
		L/500 long	1.3	0.8	0.5	0.4	0.3	0.2	0.2
120	160	*	3.9	2.9	2.2	1.7	1.4	1.2	1.0
		L/300 short	3.9	2.8	1.9	1.3	1.0	0.7	0.6
		L/300 long	2.5	1.6	1.1	0.7	0.5	0.4	0.3
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.5	0.9	0.6	0.4	0.3	0.2	0.2
100	200	*	5.1	3.7	2.8	2.2	1.8	1.5	1.3
		L/300 short	5.1	3.7	2.8	2.2	1.6	1.2	0.9
		L/300 long	4.1	2.6	1.7	1.2	0.9	0.7	0.5
		L/500 short	4.4	2.8	1.9	1.3	1.0	0.7	0.5
		L/500 long	2.4	1.5	1.0	0.7	0.5	0.4	0.3
120	200	*	6.1	4.5	3.4	2.7	2.2	1.8	1.5
		L/300 short	6.1	4.5	3.4	2.6	1.9	1.4	1.1
		L/300 long	4.9	3.1	2.1	1.4	1.1	0.8	0.6
		L/500 short	5.3	3.3	2.2	1.6	1.1	0.9	0.7
		L/500 long	2.9	1.8	1.2	0.9	0.6	0.5	0.4
140	200	*	7.1	5.2	4.0	3.1	2.5	2.1	1.8
		L/300 short	7.1	5.2	4.0	3.0	2.2	1.7	1.3
		L/300 long	5.7	3.6	2.4	1.7	1.2	0.9	0.7
		L/500 short	6.2	3.9	2.6	1.8	1.3	1.0	0.8
		L/500 long	3.4	2.2	1.4	1.0	0.7	0.6	0.4
160	200	*	8.1	5.9	4.6	3.6	2.9	2.4	2.0
		L/300 short	8.1	5.9	4.6	3.5	2.5	1.9	1.5
		L/300 long	6.5	4.1	2.7	1.9	1.4	1.1	0.8
		L/500 short	7.0	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	3.9	2.5	1.6	1.2	0.8	0.6	0.5
120	240	*	8.7	6.4	4.9	3.9	3.1	2.6	2.2
		L/300 short	8.7	6.4	4.9	3.9	3.1	2.5	1.9
		L/300 long	8.4	5.3	3.6	2.5	1.8	1.4	1.1
		L/500 short	8.7	5.7	3.8	2.7	2.0	1.5	1.1
		L/500 long	5.1	3.2	2.1	1.5	1.1	0.8	0.6
140	240	*	10.2	7.5	5.7	4.5	3.7	3.0	2.5
		L/300 short	10.2	7.5	5.7	4.6	3.6	2.9	2.2
		L/300 long	9.9	6.2	4.2	2.9	2.1	1.6	1.2
		L/500 short	10.2	6.7	4.5	3.2	2.3	1.7	1.3
		L/500 long	5.9	3.7	2.5	1.8	1.3	1.0	0.7
160	240	*	11.7	8.6	6.6	5.2	4.2	3.5	2.9
		L/300 short	11.7	8.6	6.6	5.3	4.2	3.4	2.6
		L/300 long	11.3	7.1	4.8	3.3	2.4	1.8	1.4
		L/500 short	11.6	7.7	5.1	3.6	2.6	2.0	1.5
		L/500 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8



Legend:

*) ... without deflection limitation

short ... short-term deflection

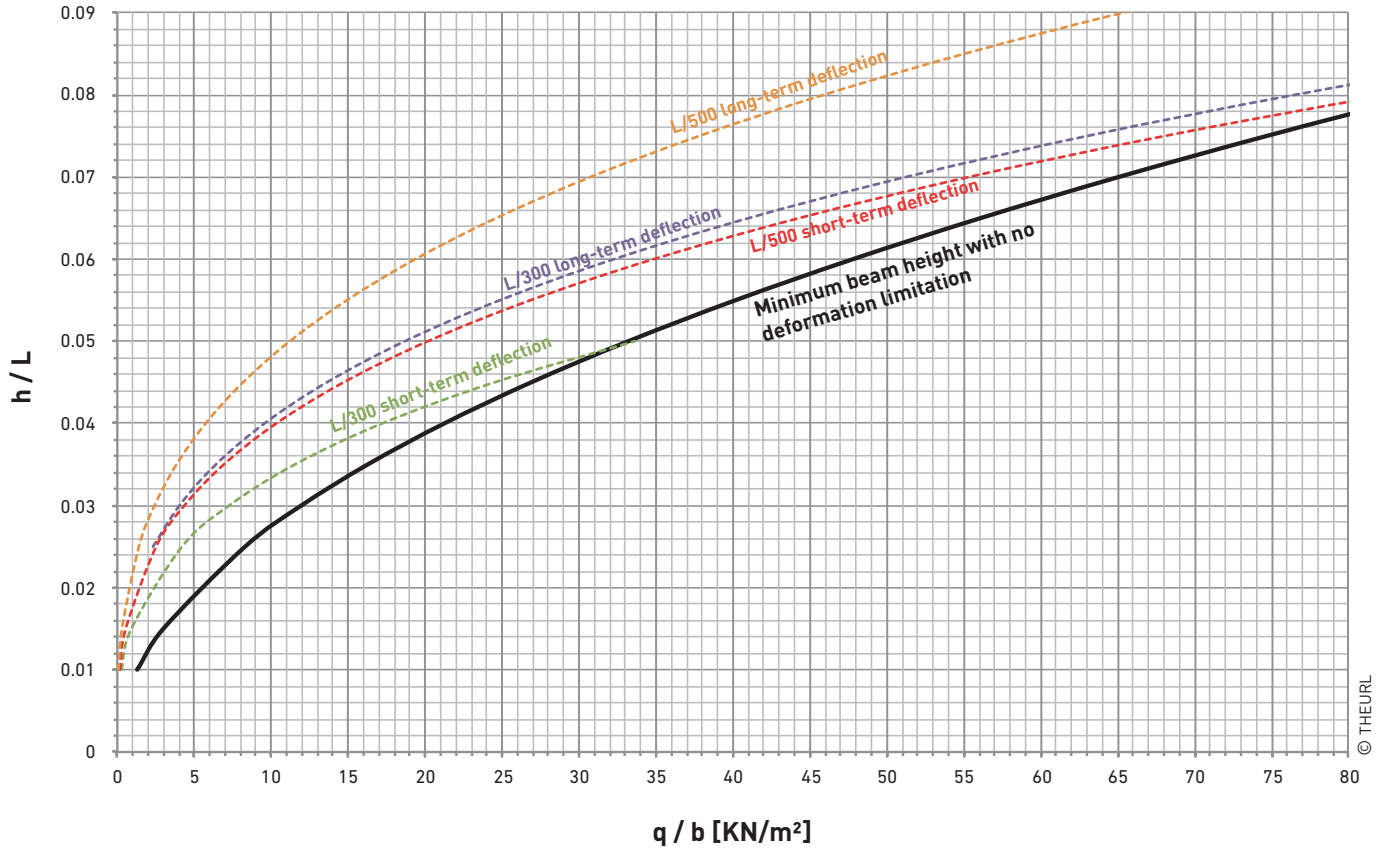
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

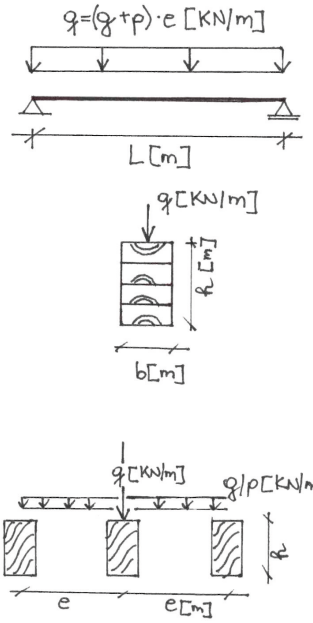
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 28h/c use class 2

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.8	2.8	2.1	1.7	1.4	1.1	0.9
		L/300 short	3.8	2.6	1.7	1.2	0.9	0.7	0.5
		L/300 long	2.3	1.4	1.0	0.7	0.5	0.4	0.3
		L/500 short	2.4	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 long	1.4	0.9	0.6	0.4	0.3	0.2	0.2
120	160	*	4.5	3.3	2.5	2.0	1.6	1.3	1.1
		L/300 short	4.5	3.1	2.1	1.4	1.1	0.8	0.6
		L/300 long	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 short	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 long	1.6	1.0	0.7	0.5	0.4	0.3	0.2
100	200	*	5.9	4.3	3.3	2.6	2.1	1.8	1.5
		L/300 short	5.9	4.3	3.4	2.4	1.7	1.3	1.0
		L/300 long	4.4	2.8	1.9	1.3	1.0	0.7	0.6
		L/500 short	4.8	3.0	2.0	1.4	1.0	0.8	0.6
		L/500 long	2.7	1.7	1.1	0.8	0.6	0.4	0.3
120	200	*	7.1	5.2	4.0	3.1	2.5	2.1	1.8
		L/300 short	7.1	5.2	4.0	2.8	2.1	1.6	1.2
		L/300 long	5.3	3.3	2.2	1.6	1.1	0.9	0.7
		L/500 short	5.7	3.6	2.4	1.7	1.2	0.9	0.7
		L/500 long	3.2	2.0	1.3	0.9	0.7	0.5	0.4
140	200	*	8.3	6.1	4.6	3.7	3.0	2.5	2.1
		L/300 short	8.3	6.1	4.6	3.3	2.4	1.8	1.4
		L/300 long	6.2	3.9	2.6	1.8	1.3	1.0	0.8
		L/500 short	6.7	4.2	2.8	2.0	1.4	1.1	0.8
		L/500 long	3.7	2.3	1.6	1.1	0.8	0.6	0.5
160	200	*	9.4	6.9	5.3	4.2	3.4	2.8	2.4
		L/300 short	9.4	6.9	5.3	3.8	2.8	2.1	1.6
		L/300 long	7.1	4.5	3.0	2.1	1.5	1.1	0.9
		L/500 short	7.6	4.8	3.2	2.3	1.7	1.2	1.0
		L/500 long	4.2	2.7	1.8	1.3	0.9	0.7	0.5
120	240	*	10.2	7.5	5.7	4.5	3.7	3.0	2.5
		L/300 short	10.2	7.5	5.7	4.5	3.6	2.7	2.1
		L/300 long	9.2	5.8	3.9	2.7	2.0	1.5	1.1
		L/500 short	9.9	6.2	4.2	2.9	2.1	1.6	1.2
		L/500 long	5.5	3.5	2.3	1.6	1.2	0.9	0.7
140	240	*	11.9	8.7	6.7	5.3	4.3	3.5	3.0
		L/300 short	11.9	8.7	6.7	5.3	4.2	3.1	2.4
		L/300 long	10.7	6.7	4.5	3.2	2.3	1.7	1.3
		L/500 short	11.6	7.3	4.9	3.4	2.5	1.9	1.4
		L/500 long	6.4	4.0	2.7	1.9	1.4	1.0	0.8
160	240	*	13.6	10.0	7.6	6.0	4.9	4.0	3.4
		L/300 short	13.6	9.9	7.6	6.0	4.8	3.6	2.8
		L/300 long	12.2	7.7	5.2	3.6	2.6	2.0	1.5
		L/500 short	13.2	8.3	5.6	3.9	2.9	2.1	1.7
		L/500 long	7.3	4.6	3.1	2.2	1.6	1.2	0.9



Legend:

*) ... without deflection limitation

short ... short-term deflection

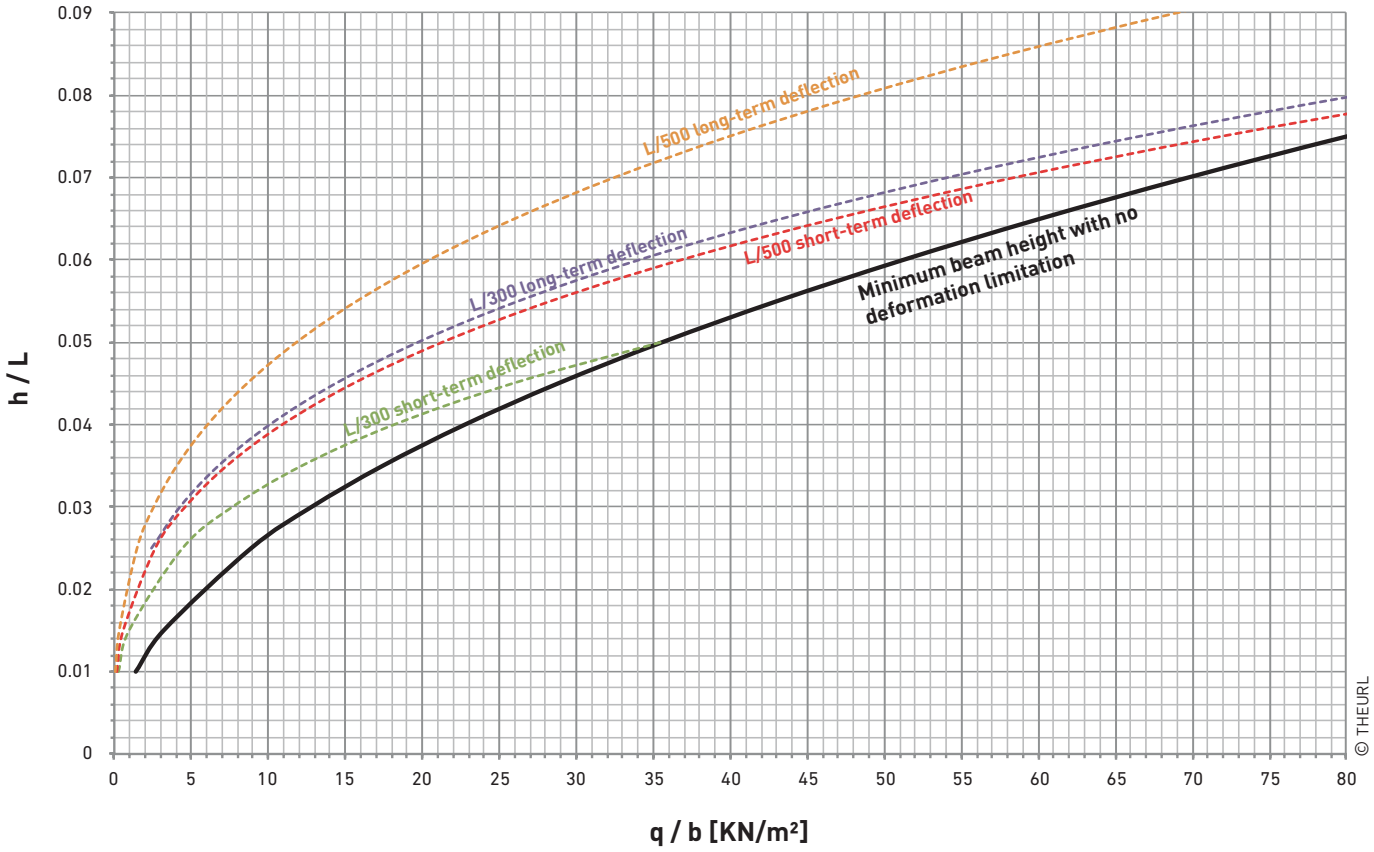
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

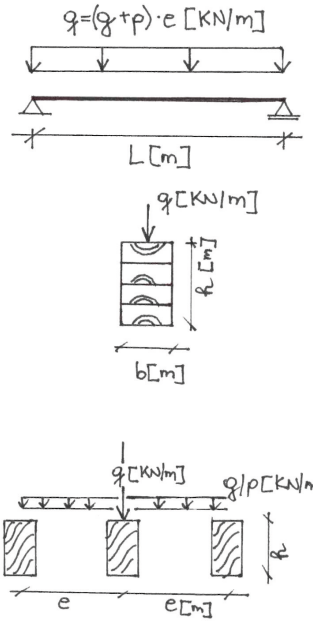
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 30c Use Class 2

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	**H [mm]**	Deflection							
100	**160**	*	4.0	3.0	2.3	1.8	1.5	1.2	1.0
		L/300 short	4.0	2.7	1.8	1.3	0.9	0.7	0.5
		L/300 long	2.4	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 short	2.6	1.6	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.4	0.9	0.6	0.4	0.3	0.2	0.2
120	**160**	*	4.9	3.6	2.7	2.2	1.7	1.4	1.2
		L/300 short	4.9	3.3	2.2	1.5	1.1	0.8	0.6
		L/300 long	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 short	3.1	2.0	1.3	0.9	0.7	0.5	0.4
		L/500 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
100	**200**	*	6.3	4.6	3.6	2.8	2.3	1.9	1.6
		L/300 short	6.3	4.6	3.5	2.5	1.8	1.4	1.1
		L/300 long	4.7	2.9	2.0	1.4	1.0	0.8	0.6
		L/500 short	5.0	3.2	2.1	1.5	1.1	0.8	0.6
		L/500 long	2.8	1.8	1.2	0.8	0.6	0.5	0.4
120	**200**	*	7.6	5.6	4.3	3.4	2.7	2.3	1.9
		L/300 short	7.6	5.6	4.3	3.0	2.2	1.6	1.3
		L/300 long	5.6	3.5	2.4	1.7	1.2	0.9	0.7
		L/500 short	6.1	3.8	2.6	1.8	1.3	1.0	0.8
		L/500 long	3.4	2.1	1.4	1.0	0.7	0.5	0.4
140	**200**	*	8.8	6.5	5.0	3.9	3.2	2.6	2.2
		L/300 short	8.8	6.5	5.0	3.5	2.5	1.9	1.5
		L/300 long	6.5	4.1	2.8	1.9	1.4	1.1	0.8
		L/500 short	7.1	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	3.9	2.5	1.7	1.2	0.8	0.6	0.5
160	**200**	*	10.1	7.4	5.7	4.5	3.6	3.0	2.5
		L/300 short	10.1	7.4	5.7	4.0	2.9	2.2	1.7
		L/300 long	7.5	4.7	3.2	2.2	1.6	1.2	0.9
		L/500 short	8.1	5.1	3.4	2.4	1.7	1.3	1.0
		L/500 long	4.5	2.8	1.9	1.3	1.0	0.7	0.6
120	**240**	*	10.9	8.0	6.1	4.9	3.9	3.2	2.7
		L/300 short	10.9	8.0	6.1	4.9	3.8	2.8	2.2
		L/300 long	9.7	6.1	4.1	2.9	2.1	1.6	1.2
		L/500 short	10.5	6.6	4.4	3.1	2.3	1.7	1.3
		L/500 long	5.8	3.7	2.5	1.7	1.3	0.9	0.7
140	**240**	*	12.7	9.4	7.2	5.7	4.6	3.8	3.2
		L/300 short	12.7	9.3	7.1	5.7	4.4	3.3	2.5
		L/300 long	11.3	7.1	4.8	3.3	2.4	1.8	1.4
		L/500 short	12.2	7.7	5.1	3.6	2.6	2.0	1.5
		L/500 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8
160	**240**	*	14.6	10.7	8.2	6.5	5.2	4.3	3.6
		L/300 short	14.5	10.7	8.1	6.5	5.0	3.8	2.9
		L/300 long	12.9	8.1	5.4	3.8	2.8	2.1	1.6
		L/500 short	13.9	8.8	5.9	4.1	3.0	2.3	1.7
		L/500 long	7.7	4.9	3.3	2.3	1.7	1.3	1.0



Legend:

*) ... without deflection limitation

short ... short-term deflection

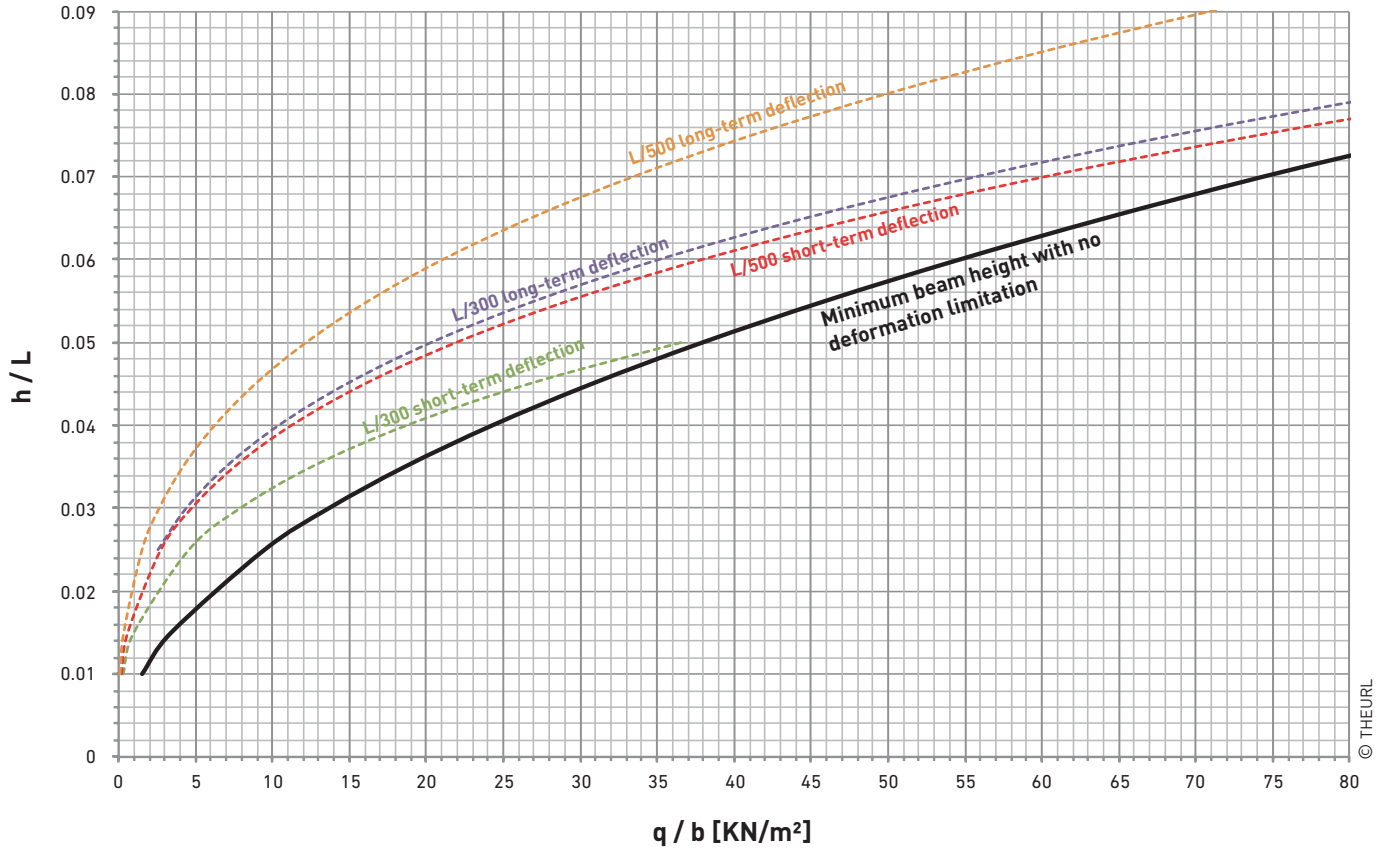
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

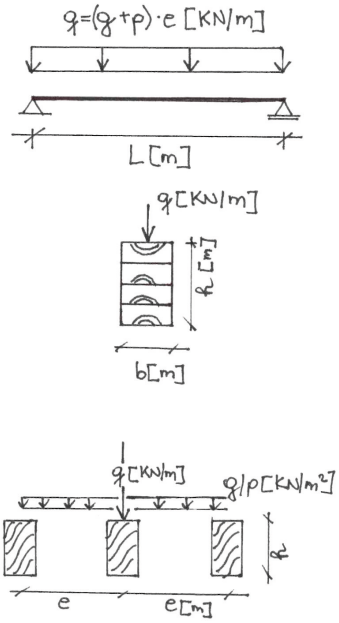
Characteristic loads, without safety factors

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 32h/c use class 2

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	4.3	3.2	2.4	1.9	1.6	1.3	1.1
		L/300 short	4.3	2.8	1.9	1.3	1.0	0.7	0.6
		L/300 long	2.5	1.6	1.0	0.7	0.5	0.4	0.3
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	1.5	0.9	0.6	0.4	0.3	0.2	0.2
120	160	*	5.2	3.8	2.9	2.3	1.9	1.5	1.3
		L/300 short	5.2	3.4	2.3	1.6	1.2	0.9	0.7
		L/300 long	3.0	1.9	1.3	0.9	0.6	0.5	0.4
		L/500 short	3.2	2.0	1.4	1.0	0.7	0.5	0.4
		L/500 long	1.8	1.1	0.8	0.5	0.4	0.3	0.2
100	200	*	6.7	5.0	3.8	3.0	2.4	2.0	1.7
		L/300 short	6.7	5.0	3.7	2.6	1.9	1.4	1.1
		L/300 long	4.8	3.1	2.0	1.4	1.0	0.8	0.6
		L/500 short	5.2	3.3	2.2	1.6	1.1	0.8	0.7
		L/500 long	2.9	1.8	1.2	0.9	0.6	0.5	0.4
120	200	*	8.1	5.9	4.6	3.6	2.9	2.4	2.0
		L/300 short	8.0	5.9	4.4	3.1	2.3	1.7	1.3
		L/300 long	5.8	3.7	2.5	1.7	1.3	0.9	0.7
		L/500 short	6.3	4.0	2.6	1.9	1.4	1.0	0.8
		L/500 long	3.5	2.2	1.5	1.0	0.8	0.6	0.4
140	200	*	9.4	6.9	5.3	4.2	3.4	2.8	2.4
		L/300 short	9.4	6.9	5.2	3.6	2.6	2.0	1.5
		L/300 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8
		L/500 short	7.3	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 long	4.1	2.6	1.7	1.2	0.9	0.7	0.5
160	200	*	10.8	7.9	6.1	4.8	3.9	3.2	2.7
		L/300 short	10.7	7.9	5.9	4.1	3.0	2.3	1.7
		L/300 long	7.8	4.9	3.3	2.3	1.7	1.3	1.0
		L/500 short	8.4	5.3	3.5	2.5	1.8	1.4	1.0
		L/500 long	4.7	2.9	2.0	1.4	1.0	0.8	0.6
120	240	*	11.3	8.6	6.6	5.2	4.2	3.5	2.9
		L/300 short	11.3	8.6	6.6	5.2	3.9	2.9	2.3
		L/300 long	10.0	6.3	4.2	3.0	2.2	1.6	1.3
		L/500 short	10.9	6.8	4.6	3.2	2.3	1.8	1.4
		L/500 long	6.0	3.8	2.5	1.8	1.3	1.0	0.8
140	240	*	13.2	10.0	7.6	6.0	4.9	4.0	3.4
		L/300 short	13.2	10.0	7.7	6.1	4.6	3.4	2.6
		L/300 long	11.7	7.4	4.9	3.5	2.5	1.9	1.5
		L/500 short	12.7	8.0	5.3	3.8	2.7	2.1	1.6
		L/500 long	7.0	4.4	3.0	2.1	1.5	1.1	0.9
160	240	*	15.1	11.4	8.7	6.9	5.6	4.6	3.9
		L/300 short	15.1	11.5	8.8	6.9	5.2	3.9	3.0
		L/300 long	13.4	8.4	5.7	4.0	2.9	2.2	1.7
		L/500 short	14.5	9.1	6.1	4.3	3.1	2.3	1.8
		L/500 long	8.0	5.1	3.4	2.4	1.7	1.3	1.0



Legend:

*) ... without deflection limitation

short ... short-term deflection

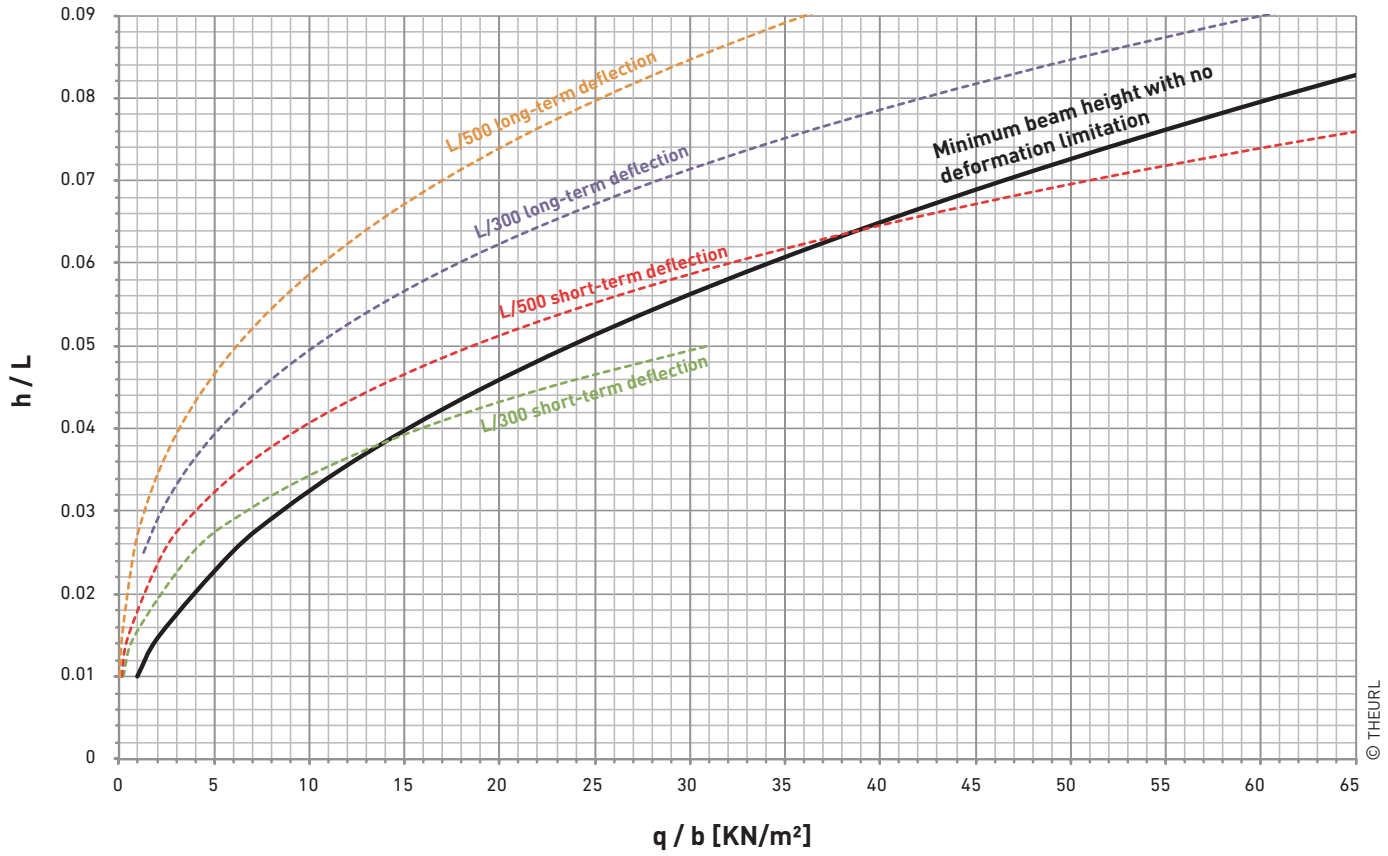
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

Characteristic loads, without safety factors

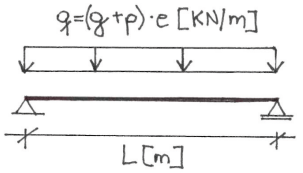
As of February 2023 · **The use of these diagrams and tables cannot replace a static calculation!**

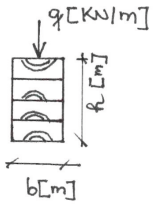
GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

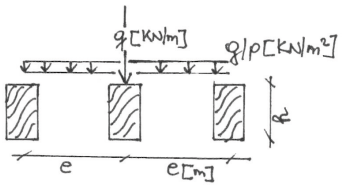
SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 24h Use Class 3

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	2.7	2.0	1.5	1.2	1.0	0.8	0.7
		L/300 short	2.7	2.0	1.5	1.1	0.8	0.6	0.5
		L/300 long	1.3	0.8	0.5	0.4	0.3	0.2	0.2
		L/500 short	2.3	1.4	1.0	0.7	0.5	0.4	0.3
		L/500 long	0.8	0.5	0.3	0.2	0.2	0.1	0.1
120	160	*	3.2	2.4	1.8	1.4	1.2	1.0	0.8
		L/300 short	3.2	2.4	1.8	1.3	1.0	0.7	0.6
		L/300 long	1.5	0.9	0.6	0.4	0.3	0.2	0.2
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	0.9	0.6	0.4	0.3	0.2	0.1	0.1
100	200	*	4.2	3.1	2.4	1.9	1.5	1.3	1.1
		L/300 short	4.2	3.1	2.4	1.9	1.5	1.2	0.9
		L/300 long	2.4	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 short	4.2	2.8	1.9	1.3	1.0	0.7	0.5
		L/500 long	1.5	0.9	0.6	0.4	0.3	0.2	0.2
120	200	*	5.1	3.7	2.8	2.2	1.8	1.5	1.3
		L/300 short	5.0	3.7	2.9	2.3	1.8	1.4	1.1
		L/300 long	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 short	5.0	3.3	2.2	1.6	1.1	0.9	0.7
		L/500 long	1.8	1.1	0.7	0.5	0.4	0.3	0.2
140	200	*	5.9	4.3	3.3	2.6	2.1	1.8	1.5
		L/300 short	5.9	4.3	3.4	2.7	2.1	1.7	1.3
		L/300 long	3.4	2.2	1.4	1.0	0.7	0.6	0.4
		L/500 short	5.9	3.9	2.6	1.8	1.3	1.0	0.8
		L/500 long	2.1	1.3	0.9	0.6	0.4	0.3	0.3
160	200	*	6.7	5.0	3.8	3.0	2.4	2.0	1.7
		L/300 short	6.7	5.0	3.8	3.0	2.4	1.9	1.5
		L/300 long	3.9	2.5	1.6	1.2	0.8	0.6	0.5
		L/500 short	6.7	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	2.3	1.5	1.0	0.7	0.5	0.4	0.3
120	240	*	7.3	5.3	4.1	3.2	2.6	2.2	1.8
		L/300 short	7.3	5.3	4.1	3.2	2.6	2.2	1.8
		L/300 long	5.1	3.2	2.1	1.5	1.1	0.8	0.6
		L/500 short	7.3	5.3	3.8	2.7	2.0	1.5	1.1
		L/500 long	3.0	1.9	1.3	0.9	0.7	0.5	0.4
140	240	*	8.5	6.2	4.8	3.8	3.1	2.5	2.1
		L/300 short	8.5	6.2	4.8	3.7	3.0	2.6	2.1
		L/300 long	5.9	3.7	2.5	1.8	1.3	1.0	0.7
		L/500 short	8.5	6.2	4.5	3.2	2.3	1.7	1.3
		L/500 long	3.5	2.2	1.5	1.1	0.8	0.6	0.4
160	240	*	9.7	7.1	5.5	4.3	3.5	2.9	2.4
		L/300 short	9.7	7.1	5.5	4.3	3.5	3.0	2.5
		L/300 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8
		L/500 short	9.7	7.1	5.1	3.6	2.6	2.0	1.5
		L/500 long	4.1	2.6	1.7	1.2	0.9	0.7	0.5







Legend:

*) ... without deflection limitation

short ... short-term deflection

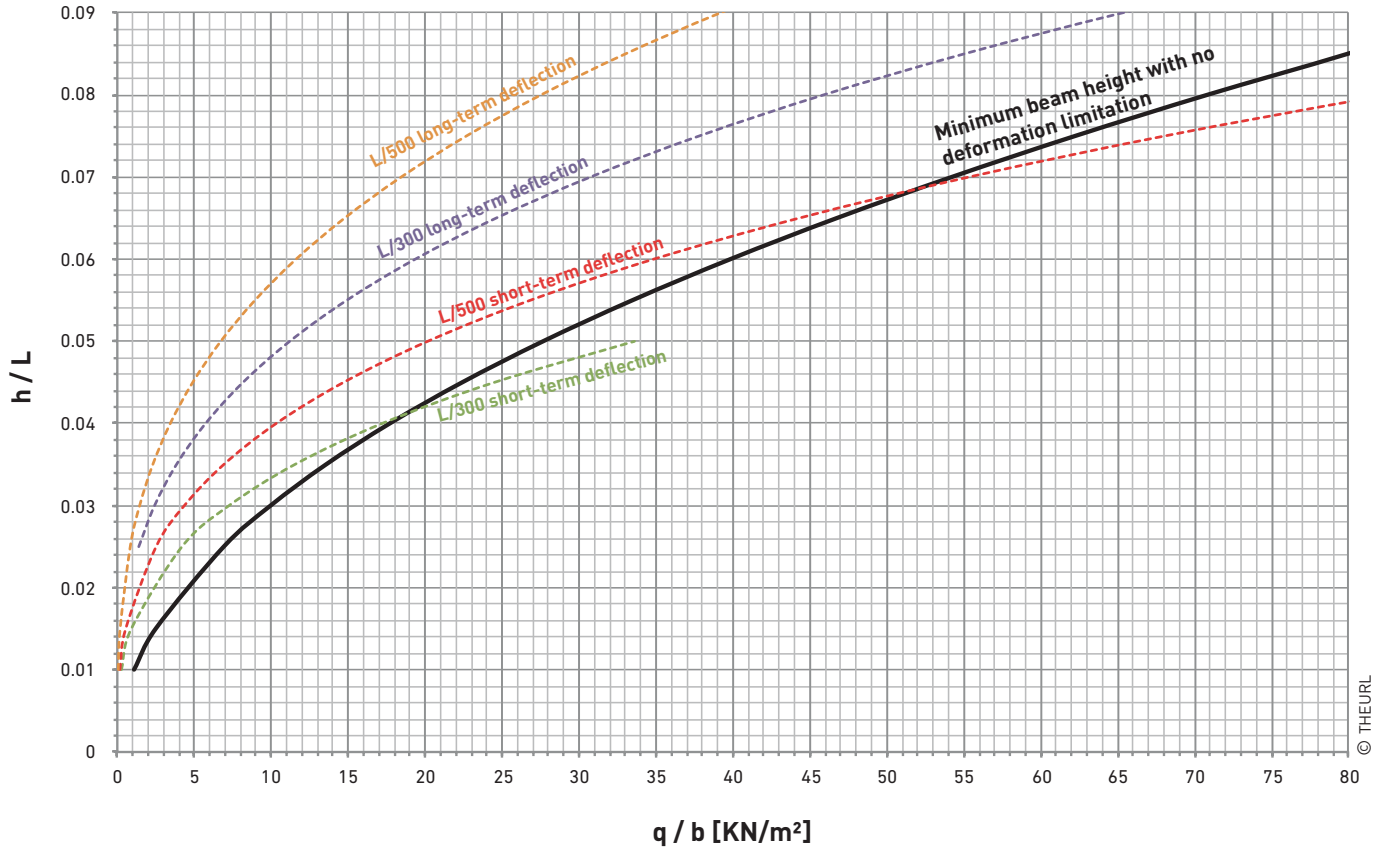
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

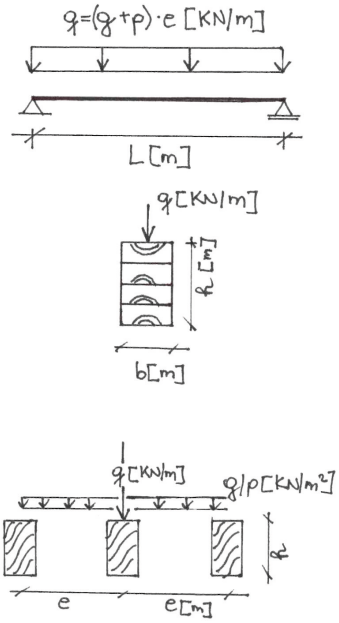
Characteristic loads, without safety factors

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 28h/c use class 3

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.1	2.3	1.8	1.4	1.1	0.9	0.8
		L/300 short	3.1	2.3	1.7	1.2	0.9	0.7	0.5
		L/300 long	1.4	0.9	0.6	0.4	0.3	0.2	0.2
		L/500 short	2.4	1.5	1.0	0.7	0.5	0.4	0.3
		L/500 long	0.8	0.5	0.3	0.2	0.2	0.1	0.1
120	160	*	3.8	2.8	2.1	1.7	1.4	1.1	0.9
		L/300 short	3.7	2.8	2.1	1.4	1.1	0.8	0.6
		L/300 long	1.6	1.0	0.7	0.5	0.4	0.3	0.2
		L/500 short	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 long	1.0	0.6	0.4	0.3	0.2	0.2	0.1
100	200	*	4.9	3.6	2.8	2.2	1.8	1.5	1.2
		L/300 short	4.9	3.6	2.8	2.2	1.7	1.3	1.0
		L/300 long	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 short	4.8	3.0	2.0	1.4	1.0	0.8	0.6
		L/500 long	1.6	1.0	0.7	0.5	0.3	0.3	0.2
120	200	*	5.9	4.3	3.3	2.6	2.1	1.8	1.5
		L/300 short	5.9	4.3	3.4	2.6	2.1	1.6	1.2
		L/300 long	3.2	2.0	1.3	0.9	0.7	0.5	0.4
		L/500 short	5.7	3.6	2.4	1.7	1.2	0.9	0.7
		L/500 long	1.9	1.2	0.8	0.6	0.4	0.3	0.2
140	200	*	6.9	5.1	3.9	3.1	2.5	2.0	1.7
		L/300 short	6.9	5.0	3.9	3.1	2.4	1.8	1.4
		L/300 long	3.7	2.3	1.6	1.1	0.8	0.6	0.5
		L/500 short	6.7	4.2	2.8	2.0	1.4	1.1	0.8
		L/500 long	2.2	1.4	0.9	0.7	0.5	0.4	0.3
160	200	*	7.9	5.8	4.4	3.5	2.8	2.3	2.0
		L/300 short	7.8	5.8	4.5	3.5	2.8	2.1	1.6
		L/300 long	4.2	2.7	1.8	1.3	0.9	0.7	0.5
		L/500 short	7.6	4.8	3.2	2.3	1.7	1.2	1.0
		L/500 long	2.5	1.6	1.1	0.8	0.6	0.4	0.3
120	240	*	8.5	6.2	4.8	3.8	3.1	2.5	2.1
		L/300 short	8.5	6.2	4.8	3.8	3.1	2.5	2.1
		L/300 long	5.5	3.5	2.3	1.6	1.2	0.9	0.7
		L/500 short	8.5	6.2	4.2	2.9	2.1	1.6	1.2
		L/500 long	3.3	2.1	1.4	1.0	0.7	0.5	0.4
140	240	*	9.9	7.3	5.6	4.4	3.6	2.9	2.5
		L/300 short	9.9	8.7	5.6	4.4	3.6	2.9	2.4
		L/300 long	6.4	4.0	2.7	1.9	1.4	1.0	0.8
		L/500 short	9.9	7.3	4.9	3.4	2.5	1.9	1.4
		L/500 long	3.9	2.4	1.6	1.1	0.8	0.6	0.5
160	240	*	11.3	8.3	6.4	5.0	4.1	3.4	2.8
		L/300 short	11.3	9.9	6.4	5.1	4.1	3.3	2.8
		L/300 long	7.3	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 short	11.3	8.3	5.6	3.9	2.9	2.1	1.7
		L/500 long	4.4	2.8	1.9	1.3	1.0	0.7	0.6



Legend:

*) ... without deflection limitation

short ... short-term deflection

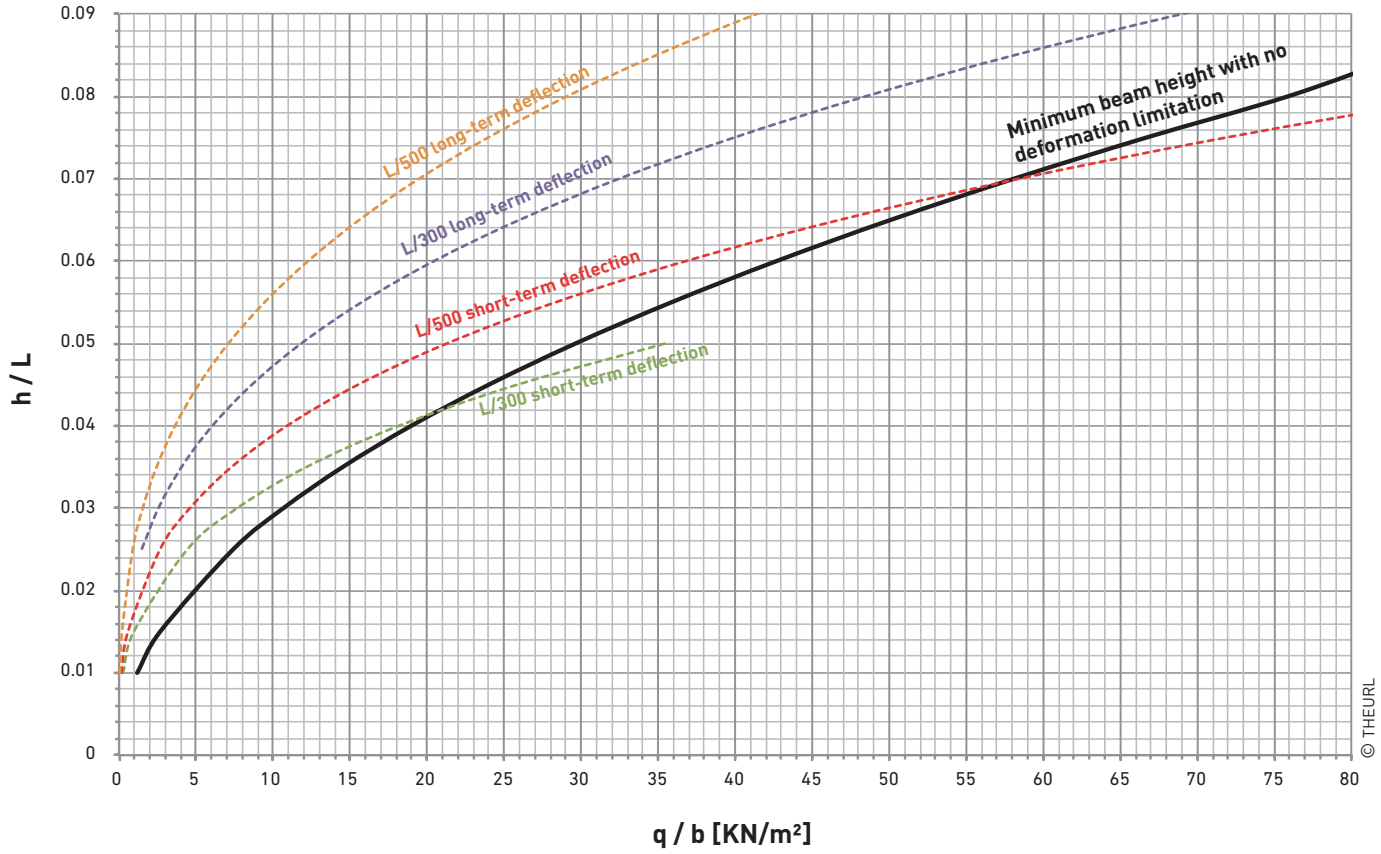
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

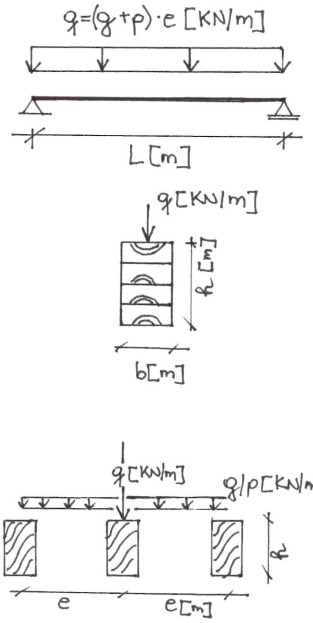
Characteristic loads, without safety factors

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 30c Use Class 3

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.4	2.5	1.9	1.5	1.2	1.0	0.8
		L/300 short	3.4	2.5	1.8	1.3	0.9	0.7	0.5
		L/300 long	1.4	0.9	0.6	0.4	0.3	0.2	0.2
		L/500 short	2.6	1.6	1.1	0.8	0.6	0.4	0.3
		L/500 long	0.9	0.5	0.4	0.3	0.2	0.1	0.1
120	160	*	4.0	3.0	2.3	1.8	1.5	1.2	1.0
		L/300 short	4.0	3.0	2.2	1.5	1.1	0.8	0.6
		L/300 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
		L/500 short	3.1	2.0	1.3	0.9	0.7	0.5	0.4
		L/500 long	1.0	0.7	0.4	0.3	0.2	0.2	0.1
100	200	*	5.3	3.9	3.0	2.3	1.9	1.6	1.3
		L/300 short	5.3	3.9	3.0	2.3	1.8	1.4	1.1
		L/300 long	2.8	1.8	1.2	0.8	0.6	0.5	0.4
		L/500 short	5.0	3.2	2.1	1.5	1.1	0.8	0.6
		L/500 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
120	200	*	6.3	4.6	3.6	2.8	2.3	1.9	1.6
		L/300 short	6.3	4.6	3.6	2.8	2.2	1.6	1.3
		L/300 long	3.4	2.1	1.4	1.0	0.7	0.5	0.4
		L/500 short	6.1	3.8	2.6	1.8	1.3	1.0	0.8
		L/500 long	2.0	1.3	0.9	0.6	0.4	0.3	0.3
140	200	*	7.4	5.4	4.1	3.3	2.7	2.2	1.8
		L/300 short	7.4	5.4	4.1	3.2	2.5	1.9	1.5
		L/300 long	3.9	2.5	1.7	1.2	0.8	0.6	0.5
		L/500 short	7.1	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 long	2.4	1.5	1.0	0.7	0.5	0.4	0.3
160	200	*	8.4	6.2	4.7	3.7	3.0	2.5	2.1
		L/300 short	8.4	6.2	4.8	3.7	2.9	2.2	1.7
		L/300 long	4.5	2.8	1.9	1.3	1.0	0.7	0.6
		L/500 short	8.1	5.1	3.4	2.4	1.7	1.3	1.0
		L/500 long	2.7	1.7	1.1	0.8	0.6	0.4	0.3
120	240	*	9.1	6.7	5.1	4.0	3.3	2.7	2.3
		L/300 short	9.1	6.7	5.1	4.0	3.3	2.7	2.2
		L/300 long	5.8	3.7	2.5	1.7	1.3	0.9	0.7
		L/500 short	9.1	6.6	4.4	3.1	2.3	1.7	1.3
		L/500 long	3.5	2.2	1.5	1.0	0.8	0.6	0.4
140	240	*	10.6	7.8	6.0	4.7	3.8	3.2	2.7
		L/300 short	10.6	7.8	6.0	4.7	3.9	3.2	2.5
		L/300 long	6.8	4.3	2.9	2.0	1.5	1.1	0.8
		L/500 short	10.6	7.7	5.1	3.6	2.6	2.0	1.5
		L/500 long	4.1	2.6	1.7	1.2	0.9	0.7	0.5
160	240	*	12.1	8.9	6.8	5.4	4.4	3.6	3.0
		L/300 short	12.1	8.9	6.8	5.3	4.4	3.6	2.9
		L/300 long	7.7	4.9	3.3	2.3	1.7	1.3	1.0
		L/500 short	12.1	8.8	5.9	4.1	3.0	2.3	1.7
		L/500 long	4.6	2.9	2.0	1.4	1.0	0.8	0.6



Legend:

*) ... without deflection limitation

short ... short-term deflection

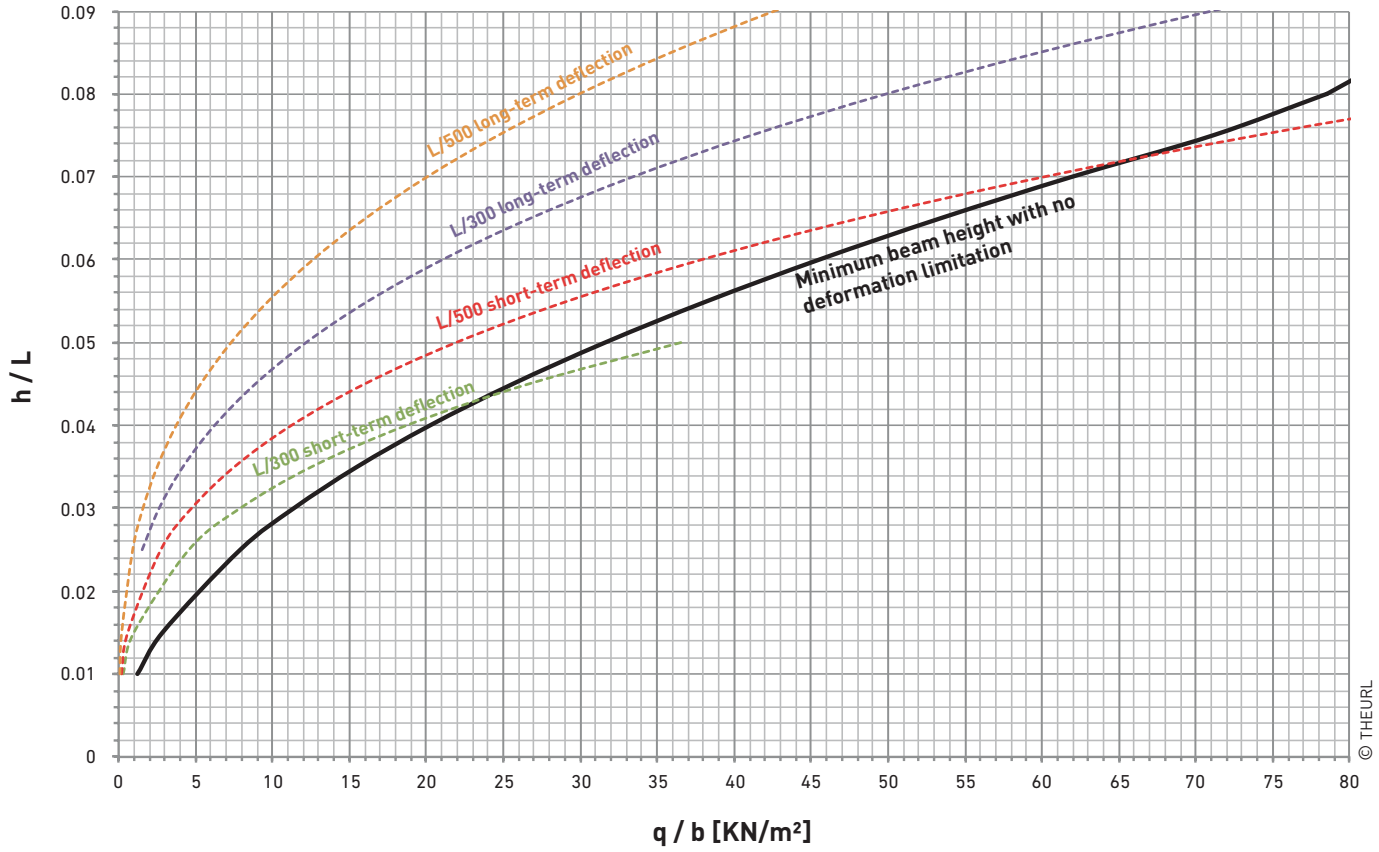
long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

PRELIMINARY DESIGN BENDING BEAM - GENERAL DESIGN DIAGRAM

Bending beam / single-span beam (beam supported laterally)
Basis: Eurocode EN 1995-1-1 / B 1995-1-1

Required beam height h with existing load q=g+p [KN/m]
q [KN/m] ... Linear load without partial safety factors



h ... Section height [m]
L ... Span [m]
b ... Cross-section width [m]

g ... Constant load [KN/m]
p ... Applied load [KN/m]
q ... Total load [KN/m]

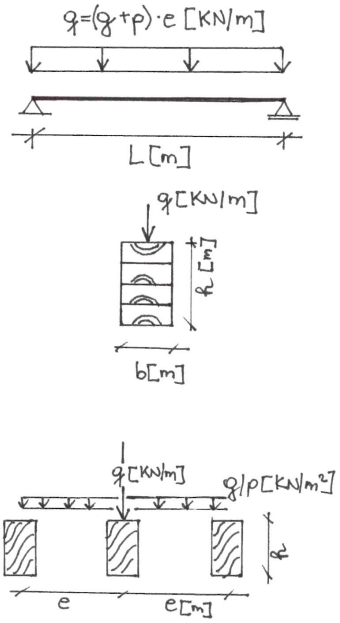
Characteristic loads, without safety factors

GLUED LAMINATED TIMBER BEAM - DESIGN AID (PRELIMINARY DESIGN)

SELECTED CROSS SECTIONS

Design tables "permissible q" for preliminary design (beam supported laterally)
Single-span beam, permissible (characteristic) linear load q [KN/m]
Material quality: GL 32h/c use class 3

Span L [m]			3.0	3.5	4.0	4.5	5.0	5.5	6.0
B [mm]	H [mm]	Deflection							
100	160	*	3.6	2.6	2.0	1.6	1.3	1.1	0.9
		L/300 short	3.6	2.6	1.9	1.3	1.0	0.7	0.6
		L/300 long	1.5	0.9	0.6	0.4	0.3	0.2	0.2
		L/500 short	2.7	1.7	1.1	0.8	0.6	0.4	0.3
		L/500 long	0.9	0.6	0.4	0.3	0.2	0.1	0.1
120	160	*	4.3	3.2	2.4	1.9	1.6	1.3	1.1
		L/300 short	4.3	3.1	2.3	1.6	1.2	0.9	0.7
		L/300 long	1.8	1.1	0.8	0.5	0.4	0.3	0.2
		L/500 short	3.2	2.0	1.4	1.0	0.7	0.5	0.4
		L/500 long	1.1	0.7	0.5	0.3	0.2	0.2	0.1
100	200	*	5.6	4.1	3.2	2.5	2.0	1.7	1.4
		L/300 short	5.6	4.1	3.2	2.5	1.9	1.4	1.1
		L/300 long	2.9	1.8	1.2	0.9	0.6	0.5	0.4
		L/500 short	5.2	3.3	2.2	1.6	1.1	0.8	0.7
		L/500 long	1.7	1.1	0.7	0.5	0.4	0.3	0.2
120	200	*	6.7	5.0	3.8	3.0	2.4	2.0	1.7
		L/300 short	6.7	4.9	3.8	3.0	2.3	1.7	1.3
		L/300 long	3.5	2.2	1.5	1.0	0.8	0.6	0.4
		L/500 short	6.3	4.0	2.6	1.9	1.4	1.0	0.8
		L/500 long	2.1	1.3	0.9	0.6	0.5	0.3	0.3
140	200	*	7.9	5.8	4.4	3.5	2.8	2.3	2.0
		L/300 short	7.8	5.7	4.5	3.5	2.6	2.0	1.5
		L/300 long	4.1	2.6	1.7	1.2	0.9	0.7	0.5
		L/500 short	7.3	4.6	3.1	2.2	1.6	1.2	0.9
		L/500 long	2.4	1.5	1.0	0.7	0.5	0.4	0.3
160	200	*	9.0	6.6	5.1	4.0	3.2	2.7	2.2
		L/300 short	9.0	6.6	5.1	4.0	3.0	2.3	1.7
		L/300 long	4.7	2.9	2.0	1.4	1.0	0.8	0.6
		L/500 short	8.4	5.3	3.5	2.5	1.8	1.4	1.0
		L/500 long	2.8	1.8	1.2	0.8	0.6	0.5	0.3
120	240	*	9.4	7.1	5.5	4.3	3.5	2.9	2.4
		L/300 short	9.4	7.1	5.5	4.3	3.5	2.9	2.3
		L/300 long	6.0	3.8	2.5	1.8	1.3	1.0	0.8
		L/500 short	9.4	6.8	4.6	3.2	2.3	1.8	1.4
		L/500 long	3.6	2.3	1.5	1.1	0.8	0.6	0.5
140	240	*	11.0	8.3	6.4	5.0	4.1	3.4	2.8
		L/300 short	11.0	8.3	6.4	5.0	4.1	3.4	2.6
		L/300 long	7.0	4.4	3.0	2.1	1.5	1.1	0.9
		L/500 short	11.0	8.0	5.3	3.8	2.7	2.1	1.6
		L/500 long	4.2	2.7	1.8	1.3	0.9	0.7	0.5
160	240	*	12.6	9.5	7.3	5.8	4.7	3.9	3.2
		L/300 short	12.5	9.5	7.3	5.7	4.7	3.9	3.0
		L/300 long	8.0	5.1	3.4	2.4	1.7	1.3	1.0
		L/500 short	12.5	9.1	6.1	4.3	3.1	2.3	1.8
		L/500 long	4.8	3.0	2.0	1.4	1.0	0.8	0.6



Legend:

*) ... without deflection limitation

short ... short-term deflection

long ... long-term deflection

q=g+p [KN/m] ... characteristic total load, without safety factors

THEURL
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