



# TRUSSED RAFTER ASSOCIATION

Information Sheet 2017 - 01 – Properties of TR26

## Characteristic Properties of TR26

The characteristic strength properties of TR26 was declared in BS EN 14081-4:2009 (Timber structures – Strength graded structural timber with rectangular cross section – Part 4: Machine grading – Grading machine settings for machine controlled systems); which was withdrawn on 31<sup>st</sup> May 2016.

Its replacement is BS EN 14081-1: 2016 (Timber structures – Strength graded structural timber with rectangular timber sections – Part 1: general requirements) published February 2016. Settings for strength grading machines are no longer published within the European Standards and so the details of characteristic properties for TR26 and other special grades are not stated.

All other requirements of BS EN 14081-1: 2016 apply to TR26.

The primary characteristic properties for TR26 has not changed but other characteristic values calculated from EN 384:2016 may have, this document sets out and records the characteristic properties for TR26 compared to the other C strength classes.

Strength classes for softwood based on edgewise bending tests - strength, stiffness and density values - BS EN 338:2016														
	Class	C14	C16	C18	C20	C22	C24	C27	TR26	C30	C35	C40	C45	C50
<b>Strength Properties (N/mm<sup>2</sup>)</b>														
<b>Bending</b>	$f_{m,k}$	14.0	16.0	18.0	20.0	22.0	24.0	27.0	<b>28.3</b>	30.0	35.0	40.0	45.0	50.0
Tension parallel	$f_{t,0,k}$	7.2	8.5	10.0	11.5	13.0	14.5	16.5	<b>17.6</b>	19.0	22.5	26.0	30.0	33.5
Tension perpendicular	$f_{t,90,k}$	0.4	0.4	0.4	0.4	0.4	0.4	0.4	<b>0.4</b>	0.4	0.4	0.4	0.4	0.4
Compression parallel	$f_{c,0,k}$	16	17	18	19	20	21	22	<b>22.9</b>	24	25	27	29	30
Compression perpendicular	$f_{c,90,k}$	2.0	2.2	2.2	2.3	2.4	2.5	2.5	<b>2.6</b>	2.7	2.7	2.8	2.9	3.0
Shear	$f_{v,k}$	3.0	3.2	3.4	3.6	3.8	4.0	4.0	<b>4.0</b>	4.0	4.0	4.0	4.0	4.0
<b>Stiffness Properties (kN/mm<sup>2</sup>)</b>														
<b>Mean modulus of elasticity parallel bending</b>	$E_{m,0,mean}$	7.0	8.0	9.0	9.5	10.0	11.0	11.5	<b>11.0</b>	12.0	13.0	14.0	15.0	16.0
5% modulus of elasticity parallel bending	$E_{m,0,05}$	4.7	5.4	6.0	6.4	6.7	7.4	7.7	<b>7.4</b>	8.0	8.7	9.4	10.1	10.7
Mean modulus of elasticity perpendicular	$E_{m,90,mean}$	0.23	0.27	0.30	0.32	0.33	0.37	0.38	<b>0.37</b>	0.40	0.43	0.47	0.50	0.53
Mean shear modulus	$G_{mean}$	0.44	0.50	0.56	0.59	0.63	0.69	0.72	<b>0.69</b>	0.75	0.81	0.88	0.94	1.00
<b>Density (kg/m<sup>3</sup>)</b>														
<b>5 percentile density</b>	$\rho_k$	290	310	320	330	340	350	360	<b>370</b>	380	390	400	410	430
Mean density	$\rho_{mean}$	350	370	380	400	410	420	430	<b>444</b>	460	470	480	490	520
<b>Note 1:</b> Values given above for tension strength, compressive strength, shear strength, characteristic modulus of elasticity in bending, mean modulus of elasticity perpendicular to grain and mean shear modulus have been calculated using equations given in EN 384. Values in red are given.														
<b>Note 2:</b> The tension strength values are conservatively estimated since grading is done for bending strength														
<b>Note 3:</b> The tabulated properties are compatible with timber at moisture content consistent with temperature 20°C and relative humidity 65%, which corresponds to a moisture content of 12% for most species of softwoods														
<b>Note 4:</b> Characteristic values for shear strength are given for timbers without fissures, according to EN 408.														
<b>Note 5:</b> These classes may also be used for hardwoods with similar strength and density profiles such as poplar or chestnut														
<b>Note 6:</b> The edgewise bending strength may be used in the case of flatwise bending														