

timbersizerPro EC5 edition:
Domestic floor joist



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Project: Sample Project **Project Ref:** SAMP001
Client: Sample Client **Client Contact:** client@sample.com

Version: SAMPLE 001 **Report No:** 15512729

Created by: Demo user **Checked:** **Approved:**
Date: 11th January 2010 **Date:** **Date:**

Design Data

Service class 2 assumed

Clear Span: 2000 mm	Strength Class: C16	Dead Load: 0.25 kN/m ²
Joist Depth: 145 mm	Joist Breadth: 38 mm	Distributed Imposed Load: 1.50 kN/m ²
Joist Spacing: 400 mm	Optimum Bearing Length: 50 mm	Concentrated Imposed Load: 2.00 kN

Section Properties

Area: $5.51 \times 10^{-3} \text{ m}^2$ **Second Moment of Area:** $9.65 \times 10^{-6} \text{ m}^4$ **Section Modulus:** $1.33 \times 10^{-4} \text{ m}^3$

Factors

$k_{\text{mod,perm}} = 0.60$	$k_{\text{def}} = 0.80$	$\gamma_{\text{timber}} = 1.30$	<i>for main loading</i>	<i>for other loading</i>
$k_{\text{mod,mt}} = 0.80$	$k_{\text{cr}} = 0.67$	$\gamma_{\text{G}} = 1.35$	$\psi_{0,1} = 0.70$	$\psi_{0,2,\text{domestic}} = 0.70$
$k_{\text{mod,st}} = 0.90$	$k_{\text{c,90}} = 1.00$	$\gamma_{\text{Q}} = 1.50$	$\psi_{1,1} = 0.50$	$\psi_{1,2,\text{domestic}} = 0.50$
$k_{\text{crit}} = 1.00$	$k_{\text{sys}} = 1.10$	<i>deflection limit = $L_e / 250$</i>	$\psi_{2,1} = 0.30$	$\psi_{2,2,\text{domestic}} = 0.30$

Load Cases

Permanent Duration: Dead Load + Self weight
Design Load $1.3500 \times 0.1000 + 1.3500 \times 0.0200 = 0.162 \text{ kN/m}$

Medium-term Duration: Dead Load + Self weight + Distributed Imposed Load
Design Load $1.3500 \times 0.1000 + 1.3500 \times 0.0200 + 1.500 \times 0.600 = 1.062 \text{ kN/m}$

Short-term Duration: Dead Load + Self weight + Concentrated Imposed Load
Design Load $1.3500 \times 0.1000 + 1.3500 \times 0.0200 = 0.162 \text{ kN/m}$ "+" $1.5000 \times 2.0000 = 3.000 \text{ kN}$

Design Checks

Description:	Strength N/mm ²	Stress N/mm ²	Result:
Permanent duration bending	8.178	0.639	pass
Medium-term duration bending	10.904	4.189	pass
Short-term duration bending	12.268	12.184	pass
Permanent duration shear	0.914	0.067	pass
Medium-term duration shear	1.218	0.442	pass
Short-term duration shear	1.371	1.286	pass
Permanent duration bearing	1.117	0.088	pass
Medium-term duration bearing	1.489	0.576	pass
Short-term duration bearing	1.675	1.675	pass
Final Deflection (mm)	Limit: 8.199	Final: 7.007	pass

EC5 timbersizer version 1.0.1.01 © TRADA Technology Ltd. 2010

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Note : Vibration checks are not included in this calculation