timbersizerPro EC5 edition:

Domestic floor joist

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

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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 x 10^{-3} m^2 **Second Moment of Area:** 9.65 x 10^{-6} m^4 **Section Modulus:** 1.33 x 10^{-4} m^3

Factors

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

Load Cases

Permanent Duration: Dead Load + Self weight
Design Load 1.3500 x 0.1000 + 1.3500 x 0.0200 = 0.162 kN/m

Medium-term Duration: Dead Load + Self weight + Distributed Imposed Load
Design Load 1.3500 x 0.1000 + 1.3500 x 0.0200 + 1.500 x 0.600 = 1.062 kN/m

Short-term Duration: Dead Load + Self weight + Concentrated Imposed Load
Design Load 1.3500 x 0.1000 + 1.3500 x 0.0200 = 0.162 kN/m "+" 1.5000 x 2.0000 = 3.000 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

Note : Vibration checks are not included in this calculation