

Calculation of a sandwich panel (1000 mm wide)

		Code					
Top facing	Material	1	steel				
	thickness in mm			0,50	SPESSORE LAMIERA		
Etf	E-modul in N/mm2			200 000			
	Max.Compr. in N/mm2			150			
Core	Material	4	Polistirene estruso				
	Thickness in mm			100,0	SPESSORE DEL PANNELLO		
Gc	G-modul in N/mm2			11,9			
	E-modul in N/mm2			20,0			
	Max. Shear strength in N/mm2			0,100			
Bottom facing	Material	1	steel				
	Thickness in mm			0,50	SPESSORE LAMIERA		
Ebf	E-modul in N/mm2			200 000			
	Max.Tension in N/mm2			150			
Span (l)	in mm			7200	INSERIRE LUNGHEZZA PANNELLO		
Load	in kg/m2			25	INSERIRE CARICO KG/M2		
Max.defl./span ratio	1/ number			200	INSERIRE MAX FRECCIA AMMISSIBILE		
Max. Moment	in kNm			1,6			
Max. Shear	in kN			0,9			
HN=	in mm			50,50			
I moment of Inertia	in mm4			2525083			
Top facing stress	in N/mm2			32,24	Capacity =	21%	stress is OK
Bottom facing stress	in N/mm2			32,24	Capacity =	21%	stress is OK
Shear strength	in N/mm2			0,01	Capacity =	9%	stress is OK
Deflection		$d = \frac{5 * load * l^4}{384(Etf * Itf + Ebf * lbf)} + \frac{load * l^2}{8 * hc * Gc}$					
d deflection	in mm			17,32	+	1,36	= 18,68 Deflection is OK
Maximum deflection	in mm						36,00
				Skin	Core		

Control of Buckling or Wrinkling of thin facings in compression.								
Max. allow. compr. stress	in N/mm2	$0.5 (Etf * Ec * Gc) ^{0.33}$				=	181,21	Wrinkling stress is OK

Note:
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