



Fiberline FRP vs Glulam

Calculation methods on FRB and glulam are almost the same but the mechanical properties are quite different. Besides, the durability of the material, especially within a harsh environment, differs. Below we have compared the relative stiffness (stiffness modulus multiplied by the moment of inertia) between the common beam geometries from Fiberline with the most common glulam beams. It should be noted that some safety coefficients or other reduction factors are not taken into account.

FRP vs. GL30c							
Fiberline Profiles	Stiffness (E*I)	100x90	166x90	200x90	266x90	300x90	400x90
I 120x60x6	8,7+10 ¹⁰						
I 160x80x8	2,7E+11						
I 200x100x10	7,1E+11						
I 240x120x12	1,5E+12						
I 300x150x15	3,7E+12						
U 120x50x6	7,4E+10						
U 150x40x6	1,1E+11						
U 160x48x8	1,8E+11						
U 200x60x10	4,8E+11						
U 240x72x8	6,5E+11						
U 240x72x12	1,0E+12						
U 300x90x15	2,5E+12						
U 360x108x18	5,2E+12						

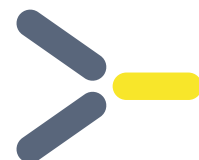
FRP vs. GL30c							
Fiberline Profiles	Stiffness (E*I)	100x140	140x140	200x140	266x140	300x140	366x140
I 120x60x6	8,7+10 ¹⁰						
I 160x80x8	2,7E+11						
I 200x100x10	7,1E+11						
I 240x120x12	1,5E+12						
I 300x150x15	3,7E+12						
U 120x50x6	7,4E+10						
U 150x40x6	1,1E+11						
U 160x48x8	1,8E+11						
U 200x60x10	4,8E+11						
U 240x72x8	6,5E+11						
U 240x72x12	1,0E+12						
U 300x90x15	2,5E+12						
U 360x108x18	5,2E+12						

Yellow = Possible to replace geometry with FRP

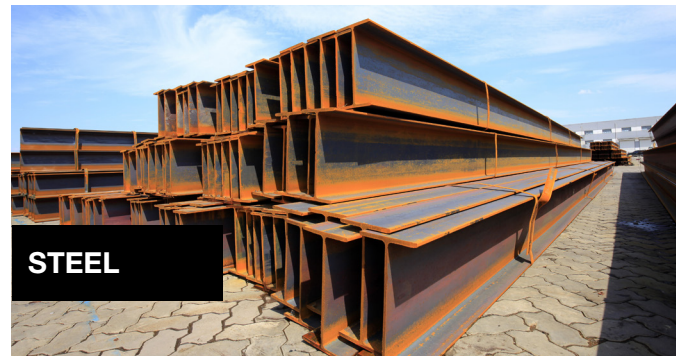
Grey = Not possible to replace with FRP. Choose different geometry instead.

		Fiberline	Glulam GL30c
Density	g/cm ³	1.8	0.48
Young modulus	N/mm ²	28.000	13.000
Shear modulus	N/mm ²	3.000	650
Tensile strength	N/mm ²	240	17
Thermal expansion	K ⁻¹	10·10 ⁻⁶	3·10 ⁻⁶
Poisson ratio		0.23/0.07	0.4

The calculations are indicative and must in each specific case be assessed and calculated by a consulting engineer. For more detailed information on mechanical properties, specific geometries and prices, visit our website www.fiberline.com. Here you can also order samples to feel the difference yourself.



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Fiberline FRP vs Steel

Calculation methods on FRB and steel are almost the same but the stiffness properties are quite different. Besides, the durability of the material, especially within a harsh environment, differs. Below we have compared the relative stiffness (stiffness modulus multiplied by the moment of inertia) between the common beam geometries from Fiberline with the most common IPE and HEB steel beams. It should be noted that some safety coefficients or other reduction factors are not taken into account.

Steel profiles (IPE)							
Fiberline Profiles	Stiffness (E*I)	80x46x5,2	100x55x5,7	120x64x6,3	140x73x6,9	160x82x7,4	180x91x8,0
I 120x60x6	8,7+10 ¹⁰						
I 160x80x8	2,7E+11						
I 200x100x10	7,1E+11						
I 240x120x12	1,5E+12						
I 300x150x15	3,7E+12						
U 120x50x6	7,4E+10						
U 150x40x6	1,1E+11						
U 160x48x8	1,8E+11						
U 200x60x10	4,8E+11						
U 240x72x8	6,5E+11						
U 240x72x12	1,0E+12						
U 300x90x15	2,5E+12						
U 360x108x18	5,2E+12						

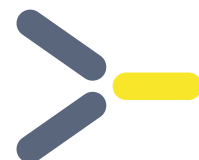
Steel Profiles (HEB)							
Fiberline Profiles	Stiffness (E*I)	100x100x10	120x120x11	140x140x12	160x160x13	180x180x14	200x200x15
I 120x60x6	8,7+10 ¹⁰						
I 160x80x8	2,7E+11						
I 200x100x10	7,1E+11						
I 240x120x12	1,5E+12						
I 300x150x15	3,7E+12						
U 120x50x6	7,4E+10						
U 150x40x6	1,1E+11						
U 160x48x8	1,8E+11						
U 200x60x10	4,8E+11						
U 240x72x8	6,5E+11						
U 240x72x12	1,0E+12						
U 300x90x15	2,5E+12						
U 360x108x18	5,2E+12						

Yellow = Possible to replace geometry with FRP

Grey = Not possible to replace with FRP. Choose different geometry instead.

		Fiberline	Steel S235
Density	g/cm ³	1.8	7.8
Young modulus	N/mm ²	28.000	210.000
Shear modulus	N/mm ²	3.000	81.000
Tensile strength	N/mm ²	240	225
Thermal expansion	K ⁻¹	10·10 ⁻⁶	12·10 ⁻⁶
Poisson ratio		0.23/0.07	0.3

The calculations are indicative and must in each specific case be assessed and calculated by a consulting engineer. For more detailed information on mechanical properties, specific geometries and prices, visit our website www.fiberline.com. Here you can also order samples to feel the difference yourself.



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