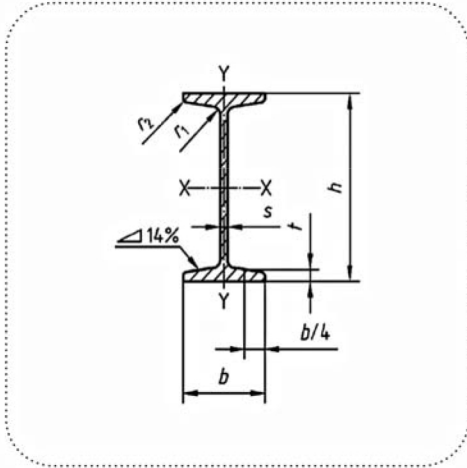


Tapered Flange Beam (IPN)



Tapered Flange Beams (IPN) equivalent to following standards:
 -Dimension Standard as per DIN 1025-1
 -Technical Specification as per EN 10025-2
 -Permissible Variation as per EN 10024
 according to Iranian National Standard No.3277.

Table1. Physical Specification of IPN.

Size	Height (h)		Flange width (b)		Web thickness (s)		Flange thickness (t)		Radius of curvature		Unit weight (w) kg/m	
	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	r ₁	r ₂	Nominal	Tolerance
120	120	±2	58	±1.5	5.1	+0.5	7.7	+2	5.1	3.1	11.1	%6
140	140		66		5.7	-1.0	8.6	-1	5.7	3.4	14.3	

Table2. Static Data of IPN.

Size	Sectional area (A) cm ²	Unit surface area (U) m ² /m	Moment of inertia relative to bending axis						Static Moment of half cross section S _x cm ³	Distance between compression & tension axis S _x cm
			x-x			y-y				
			Moment of inertia i _x cm ⁴	Section modulus W _x cm ³	Radius of gyration i _x cm	Moment of inertia I _y cm ⁴	Section modulus W _y cm ³	Radius of gyration i _y cm		
120	14.2	0.439	328	54.7	4.81	21.5	7.41	1.23	31.8	10.3
140	18.2	0.502	573	81.9	5.61	35.2	10.7	1.40	47.7	12.0

Table3. Chemical Composition of IPN.

Steel grade	Weight of elements (%)						Max. carbon equivalent (%)
	C (max)	Si	Mn	P(max)	S(max)	N(max)	
ST37 (S235JR)	0.19	0.12-0.40	0.25-1.50	0.050	0.050	0.014	0.35
ST44 (S275JR)	0.24	0.15-0.45	0.40-1.60	0.050	0.050	0.014	0.40
ST52 (S355JR)	0.27	≤0.60	≤1.70	0.050	0.050	0.014	0.45

Table4. Mechanical Properties of IPN.

Steel grade	Tensile Test			Cold bend test at angle of 180° Bend mandrel diameter in terms of specimen thickness (t)
	Min. yield point Y.P N/(mm) ²	Tensile strength U.T.S N/(mm) ²	Min. Elongation L ₀ =5.65√S ₀	
ST37 (S235JR)	235	360-510	26	1S
ST44 (S275JR)	275	410-560	23	2.5S
ST52 (S355JR)	355	470-630	22	2.5S



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