

Catálogo de Productos y Servicios

ÍNDICE

1. - LÁMINAS DE ACERO

1.1	Calidades de aceros planos más comerciales -----	6
1.2	Planchas laminadas en caliente HR (Dimensiones y pesos) -----	7
1.3	Láminas CR / Laminadas en frío -----	8
1.4	Láminas Galvanizadas -----	9
1.5	Láminas Alfajor / Antideslizantes -----	10

2. - TUBERÍA DE ACERO

2.1	Tubería de acero al carbón para conducción -----	11
2.2	Tubería de acero estructural redonda -----	13
2.3	Tubería de acero estructural cuadrada -----	14
2.4	Tubería de acero estructural rectangular -----	15
2.5	Tubería de acero negra y galvanizada – Cerramiento -----	16

3. - BARRAS DE ACERO

3.1	Barras corrugadas -----	17
3.2	Varillas o redondos lisos -----	18
3.3	Platinas y cuadrados -----	19

4. - PERFILES DE ACERO

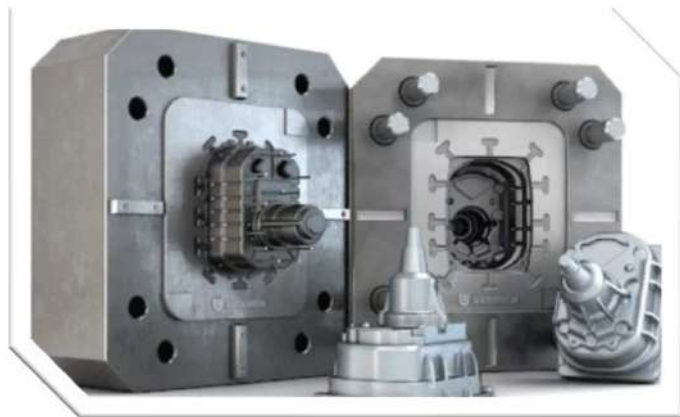
4.1	Perfil tipo Europeo – Calidades de Acero -----	21
4.2	Perfiles en L / Ángulos de lados iguales(milimétricos) -----	22
4.3	Perfiles en U / C estándar europeo - UPN y perfil C sección pequeña -----	23
4.4	Perfiles C de alas Paralelas UPE, España Y Polonia -----	24
4.5	Perfil I estándar Europeo – IPN -----	25
4.6	Perfil I liviano de alas paralelas – IPE -----	26
4.7	Perfil H Europeo de ala ancha – HE -----	28
4.8	Perfiles tipo Americano – Calidades de aceros y tolerancias -----	31
4.9	Ángulo tipo Americano de lados iguales -----	32
4.10	Perfil U o C estándar Americano -----	33
4.11	Perfil H Americano de ala ancha o WF -----	34
4.12	Equivalencias entre perfiles Europeos (IPE, HE , IPN, HD) y ----- Americanos (WF y S)	41



ÍNDICE

5. – OTROS PRODUCTOS

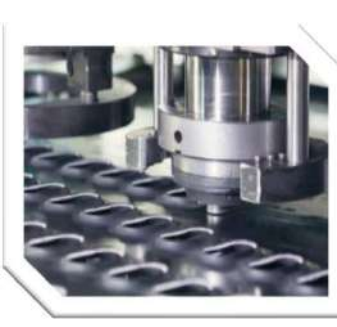
- 5.1 Acero Anti desgaste
- 5.2 Aceros Herramienta
- 5.3 Aceros Ingeniería
- 5.4 Acero inoxidable
- 5.5 Duraluminio
- 5.6 Láminas Bimetálicas
- 5.7 Barras perforadas



ÍNDICE

6. – OTROS SERVICIOS

- 6.1 Corte por laser
- 6.2 Soldadura
- 6.3 Sandblasting
- 6.4 Pintura
- 6.5 Torneado
- 6.6 Fresa
- 6.7 Taladro
- 6.8 Doblez
- 6.9 Punzonado
- 6.10 Troquelado
- 6.11 Biselado
- 6.12 Rolado



1. Láminas, Chapas
2. Tubería
3. Barras
4. Perfiles



Importaciones Directas



Láminas de Acero



Suministros Industriales



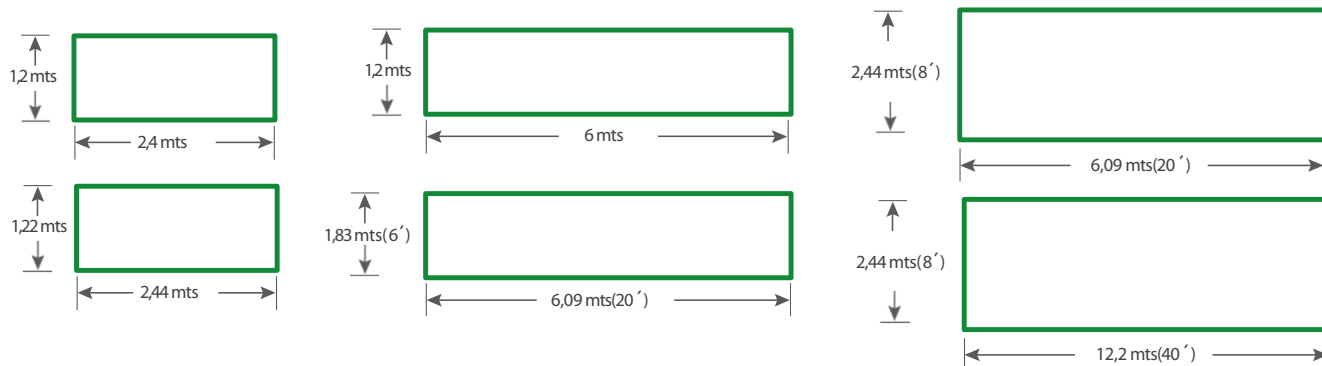
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1.1 CALIDADES DE ACEROS PLANOS MÁS COMERCIALES

CALIDADES MÁS COMÚNES		COMPOSICIÓN QUÍMICA										PROPIEDADES MECÁNICAS			APLICACIONES MÁS FRECUENTES
		L	C	MN	P	S	SI	CU	Ni	Cr	V	LÍMITE ELÁSTICO	RESISTENCIA A TRACCIÓN	% ALARG	
ASTM	EN		%	%	%	%	%	%	%	%	%				
A - 36	S235JR	MIN		0,8			0,15					≥250MPa	400MPa	20	Estructuras metálicas en general.
		MAX	0,25	1,2	0,04	0,04	0,3						550MPa	23	
A - 283 GR C		MIN		0,5			0,07					205MPa	380MPa	20	Tanques de almacenamiento.
		MAX	0,18	0,9	0,035	0,035	0,35						450MPa	23	
A - 572 GR 50	S355JR / S355J2 / S355K2	MIN					0,15					≥345MPa	450MPa	-	Estructuras metálicas mayor resistencia.
		MAX	0,23	1,35	0,04	0,05	0,4							20	
A - 131 GR A	S235JR / LR A	MIN		0,53				0,2				235MPa	400MPa	21	Construcción naval.
		MAX	0,21		0,04	0,04	0,504	0,2					490MPa	24	
A - 516 GR 70	P355GH	MIN	0,27	0,85			0,15					260MPa	485MPa	17	Recipientes a presión temperaturas media-alta.
		MAX	0,31	1,2	0,04	0,035	0,4						620MPa	21	
A - 285 GR C	P235GH	MIN										205MPa	380MPa	23	Recipientes a presión de baja e intermedia resistencia a la tracción.
		MAX	0,28	0,9	0,035	0,035							515MPa	27	
A - 514 GR A	S690QL	MIN				0,015						≥600MPa	690MPa	-	Resistencia a la abrasión.
		MAX	0,2	1,5	0,035	0,04	0,5						850MPa	19	
A - 588 GR B	S355J0W / S355J2W / S355K2W	MIN		0,75			0,15	0,02		0,04	0,001	345MPa	485MPa	-	Fabricación de estructuras metálicas que no requerirán de recubrimiento.
		MAX	0,2	1,35	0,04	0,05	0,4	0,04	0,05	0,07	0,01			18	

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FORMATOS MÁS COMERCIALES



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1.2 PLANCHAS LAMINADAS EN CALIENTE HR (DIMENSIONES Y PESOS)



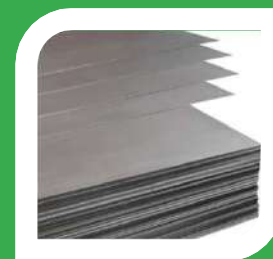
DIMENSIONES Y PESOS DE PLANCHAS COMERCIALES

	ESPESOR			M2	1.0 X 2.0 M	1.22 X 2.44 M (4' X 8')	1.83 X 6.09 M (6' X 20')	2.0 X 6.0 M	2.44 X 6.09 M (8' X 20')
	CALIBRE	PULGADA	MILÍMETRO	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.
LÁMINAS EN CALIENTE	16		1.50	11.78	23.56	35.01	131.00	141.00	175.00
	14		1.90	14.92	29.85	44.35	166.00	179.00	222.00
			2.50	19.63	39.27	58.35	219.00	236.00	292.00
	12		2.66	20.89	41.78	62.09	233.00	251.00	311.00
	11		3.00	23.56	47.12	70.02	263.00	283.00	350.00
		1/8"	3.17	24.90	49.79	73.99	278.00	299.00	370.00
			4.00	31.42	62.83	93.37	350.00	377.00	467.00
			4.50	35.34	70.69	105.04	394.00	424.00	525.00
		3/16"	4.76	37.38	74.77	111.11	417.00	449.00	556.00
			5.00	39.27	78.54	116.71	438.00	471.00	584.00
			6.00	47.12	94.25	140.05	525.00	565.00	700.00
		1/4"	6.35	49.87	99.75	148.22	556.00	598.00	741.00
		5/16"	7.94	62.36	124.72	185.33	695.00	748.00	927.00
			8.00	62.83	125.66	186.73	700.00	754.00	934.00
			9.00	70.69	141.37	210.07	788.00	848.00	1.051.00
		3/8"	9.53	74.85	149.70	222.44	834.00	898.00	1.113.00
			10.00	78.54	157.08	233.41	876.00	942.00	1.167.00
			12.00	94.25	188.50	280.10	1.051.00	1.131.00	1.401.00
		1/2"	12.70	99.75	199.49	296.44	1.112.00	1.197.00	1.483.00
			13.00	102.10	204.20	303.44	1.138.00	1.225.00	1.518.00
			15.00	117.81	235.62	350.12	1.313.00	1.414.00	1.751.00
		5/8"	15.88	124.72	249.44	370.66	1.390.00	1.497.00	1.854.00
			16.00	125.66	251.33	373.46	1.401.00	1.508.00	1.868.00
			19.00	149.23	298.45	443.49	1.664.00	1.791.00	2.218.00
		3/4"	19.05	149.62	299.24	444.65	1.668.00	1.795.00	2.224.00
			22.00	172.79	345.58	513.51	1.926.00	2.073.00	2.568.00
		7/8"	22.23	174.59	349.19	518.88	1.946.00	2.095.00	2.595.00
			25.00	196.35	392.70	583.54	2.189.00	2.356.00	2.919.00
		1"	25.40	199.49	398.98	592.87	2.224.00	2.394.00	2.965.00
			30.00	235.62	471.24	700.24	2.627.00	2.827.00	3.502.00
		1 1/4"	31.75	249.36	498.73	741.09	2.780.00	2.992.00	3.707.00
			32.00	251.33	502.65	746.93	2.802.00	3.016.00	3.736.00
			35.00	274.89	549.78	816.95	3.065.00	3.299.00	4.086.00
			38.00	298.45	596.90	886.97	3.327.00	3.581.00	4.436.00
		1 1/2"	38.10	299.24	598.47	889.31	3.336.00	3.591.00	4.448.00
			40.00	314.16	628.32	933.66	3.502.00	3.770.00	4.670.00
			50.00	392.70	785.40	1.167.07	4.378.00	4.712.00	5.837.00
		2"	50.80	398.98	797.96	1.185.74	4.448.00	4.788.00	5.931.00
			62.00	486.95	973.89	1.447.17	5.429.00	5.843.00	7.238.00
		2 1/2"	63.50	498.73	997.46	1.482.18	5.560.00	5.985.00	7.413.00
			75.00	589.05	1.178.10	1.750.61	6.567.00	7.069.00	8.756.00
		3"	76.20	598.47	1.196.95	1.778.62	6.672.00	7.182.00	8.896.00
			100.00	785.40	1.570.80	2.334.14	8.756.00	9.425.00	11.675.00
		4"	101.60	797.96	1.595.93	2.371.49	8.896.00	9.576.00	11.861.00

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1.3 LÁMINAS CR/
LAMINADAS EN FRÍO

LÁMINAS DE ACERO LAMINADAS EN FRÍO ESPECIFICACIONES TÉCNICAS

CALIDADES MAS COMUNES	COMPOSICIÓN QUÍMICA						PROPIEDADES MECÁNICAS						APLICACIONES MAS FRECUENTES
ASTM	L	C	MN	P	S	SI	LÍMITE ELÁSTICO		RESISTENCIA A LA TRACCIÓN		% ALAR	DUREZA	
A 366	MIN						-	-	-	-	32	-	General comercial
	MAX	0,12	0,5	0,04	0,05		-	-	28Kg/mm2		39	-	
A 619	MIN						-	-	-	-	34	-	Estampado profundo
	MAX	0,1	0,45	0,04	0,04		-	-	28Kg/mm2		41	-	
A 620	MIN						-	-	-	-	36	-	Estampado extra-profundo
	MAX	0.08	0.4	0.03	0.03		-	-	28Ka/mm2		43	-	

DIMENSIONES Y PESOS DE LAMINAS COMERCIALES

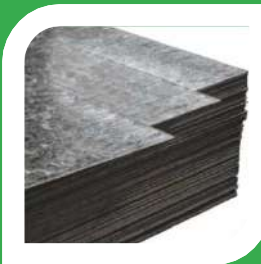
ESPESOR M.S.G		M2	1.0 X 2.0MTS	1.20 X 2.44MTS	1.22 X 2.44MTS 4'X 8'	ESPESOR U.S.G.		M2	1.0 X 2.0MTS	1.20 X 2.44MTS	1.22 X 2.44MT 4'X 8'
CALIBRE	MILIMETRO		Kg.	Kg.	Kg.	CALIBRE	MILIMETRO		Kg.	Kg.	Kg.
30	0,305	2,45	4,91	7,18	7,3	30	0,318	2,5	4,99	7,31	7,43
29	0,343	2,76	5,52	8,08	8,21	29	0,357	2,8	5,6	8,21	8,34
28	0,378	3,04	6,08	8,9	9,05	28	0,397	3,12	6,23	9,12	9,28
27	0,417	3,35	6,71	9,82	9,98	27	0,437	3,43	6,86	10,04	10,21
26	0,455	3,66	7,32	10,71	10,89	26	0,476	3,74	7,47	10,94	11,12
25	0,531	4,27	8,54	12,5	12,71	25	0,556	4,36	8,73	12,78	12,99
24	0,607	4,88	9,76	14,29	14,53	24	0,635	4,98	9,97	14,59	14,84
23	0,683	5,49	10,98	16,08	16,35	23	0,714	5,6	11,21	16,41	16,68
22	0,759	6,1	12,21	17,87	18,17	22	0,794	6,23	12,46	18,25	18,55
21	0,876	7,04	14,09	20,63	20,97	21	0,883	6,93	13,86	20,29	20,63
20	0,912	7,33	14,67	21,47	21,83	20	0,952	7,47	14,95	21,88	22,24
19	1,062	8,54	17,08	25,01	25,42	19	1,111	8,72	17,44	25,53	25,96
18	1,214	9,76	19,52	28,58	29,06	18	1,27	9,97	19,94	29,19	29,68
17	1,367	10,99	21,99	32,19	32,72	17	1,429	11,22	22,43	32,84	33,39
16	1,519	12,21	24,43	35,77	36,36	16	1,588	12,46	24,93	36,5	37,11
15	1,709	13,74	27,49	40,24	40,91	15	1,786	14,02	28,04	41,05	41,73
14	1,897	15,25	30,51	44,67	45,41	14	1,984	15,57	31,15	45,6	46,36
13	2,278	18,32	36,64	53,64	54,53	13	2,381	18,69	37,38	54,72	55,64
12	2,657	21,37	42,73	62,56	63,6	12	2,778	21,81	43,61	63,85	64,91
11	3,038	24,43	48,86	71,53	72,72	11	3,175	24,92	49,84	72,97	74,19

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1.4 LÁMINAS GALVANIZADAS



LÁMINAS GALVANIZADAS							ESPECIFICACIONES TÉCNICAS					
CALIDADES MAS COMUNES	COMPOSICIÓN QUÍMICA						PROPIEDADES MECÁNICAS				APLICACIONES MAS FRECUENTES	
ASTM	L	C	MN	P	S	SI	LÍMITE ELÁSTICO	RESISTENCIA A LA TRACCIÓN	% ALARGA	DUREZA		
A 366	MIN						-	-	-	32	-	General comercial
	MAX	0,12	0,50	0,04	0,05		-	-	28Kg/mm2	39	-	
A 619	MIN						-	-	-	34	-	Estampado profundo
	MAX	0,10	0,45	0,04	0,04		-	-	28Kg/mm2	41	-	
A 620	MIN						-	-	-	36	-	Estampado extraprofundo
	MAX	0,08	0,40	0,03	0,03		-	-	28Kg/mm2	43	-	

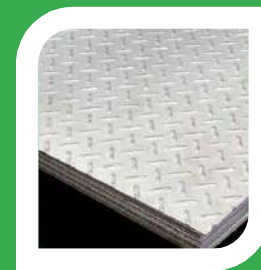
DIMENSIONES Y PESOS DE LÁMINAS DE ACERO GALVANIZADAS												
LÁMINAS GALVANIZADAS	ESPESOR		M2	1.0X 2.0M	1.0 X 3.0M	1.0 X 6.0M	ESPESOR		M2	1.2 X 1.0M	1.20x 2.44M	1.22X 2.44M 4'x8'
	CALIBRE	MILIMETRO	Kg.	Kg.	Kg.	Kg.	CALIBRE	MILIMETRO	Kg.	Kg.	Kg.	Kg.
	31.00	0.27	2.27	4.55	6.82	13.65	31.00	0.27	2.27	2.73	6.66	6.77
	30.00	0.30	2.51	5.02	7.53	15.06	30.00	0.30	2.51	3.01	7.35	7.47
	29.00	0.34	2.87	5.74	8.61	17.22	29.00	0.34	2.87	3.44	8.40	8.54
	28.00	0.35	2.93	5.86	8.79	17.58	28.00	0.35	2.93	3.52	8.58	8.72
	27.00	0.42	3.49	6.98	10.47	20.95	27.00	0.42	3.49	4.19	10.22	10.39
	26.00	0.45	3.71	7.43	11.14	22.29	26.00	0.45	3.71	4.46	10.88	11.06
	25.00	0.53	4.38	8.77	13.15	26.30	25.00	0.53	4.38	5.26	12.84	13.05
	24.00	0.60	4.89	9.79	14.68	29.37	24.00	0.60	4.89	5.87	14.33	14.57
	23.00	0.68	5.57	11.14	16.72	33.43	23.00	0.68	5.57	6.69	16.32	16.59
	22.00	0.70	5.71	11.43	17.14	34.29	22.00	0.70	5.71	6.86	16.73	17.01
	21.00	0.88	7.15	14.30	21.46	42.91	21.00	0.88	7.15	8.58	20.94	21.29
	20.00	0.90	7.28	14.57	21.85	43.71	20.00	0.90	7.28	8.74	21.33	21.59
	19.00	1.06	8.60	17.19	25.79	51.58	19.00	1.06	8.60	10.32	25.17	25.59
	18.00	1.20	9.69	19.39	29.08	58.17	18.00	1.20	9.69	11.63	28.39	28.86
	17.00	1.37	11.04	22.09	33.13	66.27	17.00	1.37	11.04	13.25	32.34	32.88
	16.00	1.50	12.05	24.10	36.15	72.30	16.00	1.50	12.05	14.46	35.28	35.87
	15.00	1.71	13.73	27.46	41.19	82.37	15.00	1.71	13.73	16.47	40.20	40.87
	14.00	1.90	15.19	30.38	45.57	91.14	14.00	1.90	15.19	18.23	44.48	45.22
	13.00	2.28	18.21	36.42	54.64	109.27	13.00	2.28	18.21	21.85	53.32	54.21
	12.00	2.50	19.90	39.79	59.69	119.37	12.00	2.50	19.90	23.87	58.25	59.22
	11.00	3.00	23.75	47.49	71.24	142.47	11.00	3.00	23.75	28.49	69.53	70.68

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1.5 LÁMINAS ALFAJOR / ANTIDESLIZANTES



LÁMINAS ALFAJOR / ANTIDESLIZANTE								ESPECIFICACIONES TÉCNICAS			
CALIDADES MÁS COMUNES	COMPOSICIÓN QUÍMICA							PROPIEDADES MECÁNICAS			APLICACIONES MÁS FRECUENTES
	L	C	MN	P	S	SI	CU	LÍMITE ELÁSTICO	RESISTENCIA A LA TRACCIÓN	% ALARGA	
ASTM		%	%	%	%	%	%				Fabricación de suelos antideslizantes
ASTM 569	MIN										
	MAX	0,15	0,6	0,035	0,01			250MPa	365MPa	22	

DIMENSIONES Y PESOS DE PLANCHAS COMERCIALES									
	ESPESOR			M2	10X20MTS	122X244M (4'X8')	10X3.0M	122X3.66M (4'X12')	183X6.09M (6'X20')
	CALIBRE	PULGADA	MILIMETRO	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.
LÁMINAS ALFAJOR			2.50	20.68	41.35	61.44	62.03	92.32	230.00
	12		2.66	22.00	44.00	65.38	65.99	98.23	245.00
	11		3.00	24.81	49.62	73.73	74.43	110.78	277.00
		1/8"	3.17	26.22	52.43	77.91	78.65	117.06	292.00
			4.00	33.08	66.16	98.31	99.24	147.71	369.00
			4.50	37.22	74.43	110.60	111.65	166.17	415.00
		3/16"	4.76	39.37	78.73	116.99	118.10	175.77	439.00
			5.00	41.35	82.70	122.89	124.05	184.64	461.00
			5.50	45.49	90.97	135.18	136.46	203.10	507.00
			6.00	49.62	99.24	147.47	148.86	221.56	553.00
		1/4"	6.35	52.51	105.03	156.07	157.54	234.49	585.00
			7.50	62.03	124.05	184.33	186.08	276.95	691.00
		5/16"	7.94	65.66	131.33	195.15	196.99	293.20	732.00
			8.00	66.16	132.32	196.62	198.48	295.42	738.00
			9.00	74.43	148.86	221.20	223.29	332.34	830.00
		3/8"	9.53	78.81	157.63	234.23	236.44	351.92	879.00
			10.00	82.70	165.40	245.78	248.10	369.27	922.00
			12.00	99.24	198.48	294.93	297.72	443.13	1.106.00
		1/2"	12.70	105.03	210.06	312.14	315.09	468.98	1.171.00

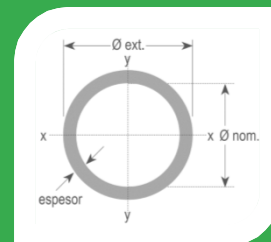
*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial

MEDIDAS ANCHO X LARGO COMERCIALES



2

2.1 TUBERÍA DE ACERO AL CARBÓN PARA CONDUCCIÓN.



CALIDADES	COMPOSICIÓN QUÍMICA CARACTERÍSTICAS MECÁNICAS							
	C	Mn	Si	P	S	LÍMITE ELÁSTICAS	RESISTENCIA A LA TRACCIÓN	
API - 5L X 42	0.29	1.35	-	0.04	0.05	42.000 PSI	289 MPA	60.000 PSI 413 MPA
ASTM - A 53 GR A	0.25	0.90	-	0.05	0.06	30.000 PSI	207 MPA	48.000 PSI 331 MPA
ASTM - A 53 GR B	0.30	1.20	-	0.05	0.06	35.000 PSI	241 MPA	60.000 PSI 413 MPA
ASTM - A 106 GR B	0.30	0.29/106	0.1	0.048	0.058	35.000 PSI	241 MPA	60.000 PSI 413 MPA

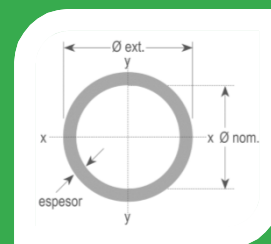
DIÁMETRO			ESPESOR DE PARED		PESO NOMINAL		WEIGHT CLASS	SCH
NOMINAL	EXTERIOR							
Pulg.	Pulg.	mm	Pulg.	mm.	L/P	Kg/m		
1/4"	0.540	13.70	0.088	2.24	0.42	0.63	STD	40
1/4"	0.540	13.70	0.019	3.02	0.54	0.80	XS	80
3/8"	0.675	17.20	0.091	2.31	0.57	0.84	STD	40
3/8"	0.675	17.20	0.126	3.20	0.74	1.10	XS	80
1/2"	0.840	21.30	0.109	2.77	0.85	1.27	STD	40
1/2"	0.840	21.30	0.147	3.73	1.09	1.62	XS	80
3/4"	1.050	26.70	0.113	2.87	1.13	1.69	STD	40
3/4"	1.050	26.70	0.154	3.91	1.47	2.20	XS	80
1"	1.315	33.40	0.133	3.38	1.68	2.50	STD	40
1"	1.315	33.40	0.179	4.55	2.17	3.24	XS	80
1 1/4"	1.660	42.20	0.140	3.56	2.27	3.39	STD	40
1 1/4"	1.660	42.20	0.191	4.85	3.00	4.47	XS	80
1 1/2"	1.900	48.30	0.145	3.68	2.72	4.05	STD	40
1 1/2"	1.900	48.30	0.200	5.08	3.63	5.41	XS	80
2"	2.375	60.30	0.154	3.91	3.65	5.44	STD	40
2"	2.375	60.30	0.128	5.54	5.02	7.48	XS	80
2"	2.375	60.30	0.344	8.74	7.46	11.11		160
2 1/2"	2.875	73.00	0.203	5.16	5.79	8.63	STD	40

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



2

2.1 TUBERÍA DE ACERO CARBÓN PARA CONDUCCIÓN.



CALIDADES	COMPOSICIÓN QUÍMICA CARACTERÍSTICAS MECÁNICAS							
	C	Mn	Si	P	S	LÍMITE ELÁSTICAS	RESISTENCIA A LA TRACCIÓN	
API - 5L X 42	0.29	1.35	-	0.04	0.05	42.000 PSI	289 MPA	60.000 PSI 413 MPA
ASTM - A 53 GR A	0.25	0.90	-	0.05	0.06	30.000 PSI	207 MPA	48.000 PSI 331 MPA
ASTM - A 53 GR B	0.30	1.20	-	0.05	0.06	35.000 PSI	241 MPA	60.000 PSI 413 MPA
ASTM - A 106 GR B	0.30	0.29/106	0.1	0.048	0.058	35.000 PSI	241 MPA	60.000 PSI 413 MPA

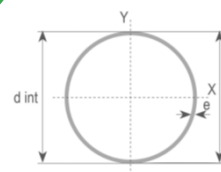
DIÁMETRO			ESPESOR DE PARED		PESO NOMINAL		WEIGHT CLASS	SCH
NOMINAL	EXTERIOR							
Pulg.	Pulg.	mm	Pulg.	mm.	L/P	Kg/m		
2 1/2"	2.875	73.00	0.276	7.01	7.66	11.41	XS	80
2 1/2"	2.875	73.00	0.375	9.53	10.01	14.92		160
3"	3.500	88.90	0.216	5.49	7.58	11.29	STD	40
3"	3.500	88.90	0.300	7.62	10.25	15.27	XS	80
3"	3.500	88.90	0.438	11.13	14.32	21.35		160
4"	4.500	114.30	0.237	6.02	10.79	16.07	STD	40
4"	4.500	114.30	0.337	8.56	14.98	22.32	XS	80
4"	4.500	114.30	0.531	13.49	22.51	33.54		160
5"	5.563	141.30	0.258	6.55	14.62	21.77	STD	40
5"	5.563	141.30	0.375	9.53	20.78	30.97	XS	80
5"	5.563	141.30	0.625	15.88	32.96	49.11		160
6"	6.625	168.30	0.280	7.11	18.97	28.26	STD	40
6"	6.625	168.30	0.432	10.97	28.57	42.56	XS	80
6"	6.625	168.30	0.719	18.26	45.35	67.56		160
8"	8.625	219.10	0.322	8.18	28.55	42.55	STD	40
8"	8.625	219.10	0.500	12.70	43.39	64.64	XS	80
8"	8.625	219.10	0.906	23.01	74.69	111.27		160
10"	10.750	273.10	0.365	9.27	40.48	60.31	STD	40
10"	10.750	273.10	0.594	15.09	64.43	96.01	XS	80
12"	12.750	323.90	0.406	10.31	53.52	79.70	STD	40
14"	14.875	377.90	0.440	11.13	63.51	94.49	STD	40
16"	17.000	431.80	0.500	12.70	82.86	123.29	STD	40
18"	19.125	485.80	0.506	14.27	104.78	155.91	STD	40
20"	21.185	538.20	0.590	15.08	123.03	183.05	STD	40
24"	25.375	644.50	0.690	17.48	171.49	255.14	STD	40

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2

2.2 TUBERÍA DE ACERO ESTRUCTURAL REDONDA.



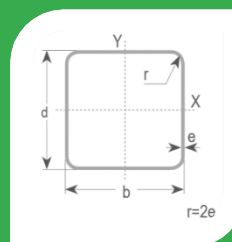
REFERENCIA DIÁMETRO NOMINAL	REFERENCIA DIÁMETRO REAL				Peso teórico calculado	Área A	FLEXIÓN			MÓDULO PLÁSTICO Z	MOMENTO DE INERCIA TORCIONAL J	CONSTANTE DE CORTE TORSIONAL C
		Diámetro Exterior	Diámetro interior	Espesor			I	S	r			
Tubería Circular		d [mm]	d int [mm]	t [mm]	[kg / m]	[mm ²]	[mm ⁴]	[mm ³]	[mm]	[mm ³]	J [mm ⁴]	C [mm ³]
1-1/2"	1.89"	48	45	1,5	10,32	204,25	55503,5	2312,6	16,48	3030,9	111007	4759,48
1-1/2"	1.89"	48	44	2	13,61	269,61	71863,9	2994,3	16,33	3961,9	143727,8	6219,97
1-1/2"	1.89"	48	42	3	19,98	396,27	101629,2	4234,5	16,01	5709,8	203258,4	8957,63
2"	2.36"	60	56	2	17,16	339,73	143695,2	4789,8	20,57	6289,4	287390,3	9876,04
2"	2.36"	60	55	2,5	21,27	421,27	175449	5848,3	20,41	7738,1	350898	12148,37
2-1/2"	2.87"	73	69	2	21,01	415,7	263154,7	7209,7	25,16	9415,4	526309,5	14786,34
2-1/2"	2.87"	73	68	2,5	26,08	516,22	322663,6	8840,1	25	11617,5	645327,3	18242,08
3"	3-1/2"	89	85	2	25,75	509,19	483529,9	10865,8	30,82	14125,8	967059,8	22185,43
3"	3-1/2"	89	84	2,5	32	633,09	594944,9	13369,5	30,66	17470,9	1189889,9	27436,62
3"	3-1/2"	89	83	3	38,18	755,63	702735,1	15791,8	30,5	20743	1405470,2	32571,62
3"	3-1/2"	89	81	4	50,31	996,64	907757,8	20399,1	30,18	27071,5	1815515,6	42496,9
4"	4-1/2"	114,3	109,3	2,5	41,36	817,89	1282428,8	22439,7	39,6	29156	2564857,5	45791,51
4"	4-1/2"	114,3	108,3	3	49,41	977,39	1520118,1	26598,7	39,44	34699,4	3040236,2	54494,38
4"	4-1/2"	114,3	106,3	4	65,28	1292,32	1977533,3	34602,5	39,12	45505,1	3955066,5	71452,26
4"	4-1/2"	114,3	102,3	6	96,15	1905,87	2823351,4	49402,5	38,49	66013,7	5646702,8	103603,15
---	6"	152,4	144,4	4	87,83	1737,58	4804323,8	63048,9	52,58	82250,5	9608647,6	129171,86
---	6"	152,4	140,4	6	129,98	2573,77	6945069,6	91142,6	51,95	120341	13890139,2	188940,26
---	6"	152,4	136,4	8	170,93	3388,22	8923184,6	117102	51,32	156477	17846369,2	245577,84
8"	8-5/8"	219,1	209,1	5	158,38	3132,41	18011226,4	164430	75,83	213831,6	36022452,9	335833,23
8"	8-5/8"	219,1	207,1	6	189,17	3742,59	21338003,5	194801	75,51	254395	42676006,9	399511,69
8"	8-5/8"	219,1	203,1	8	249,86	4946,64	27728839,7	253145	74,87	333370,2	55457679,3	523441,07
8"	8-5/8"	219,1	199,1	10	309,37	6128,96	33779775,8	308386	74,24	409519,7	67559551,6	642850,94
10"	10-3/4"	273,1	259,1	7	275,57	5451,21	48438094,5	354793	94,26	462585,6	96876188,9	726483,33
10"	10-3/4"	273,1	255,1	9	351,64	6959,8	61007440,9	446859	93,63	586560	122014881,8	921059,29
10"	10-3/4"	273,1	249,1	12.00 *	463,53	9181,91	78862174	577639	92,68	765887,2	157724347,9	1202325,07
12"	12-3/4"	323,9	307,9	8	373,89	7395,59	92602663,4	571886	111,9	744995	185205326,8	1170019,81
12"	12-3/4"	323,9	303,9	10	464,4	9190,15	113760470	702550	111,3	920426	227520939,1	1445380,54
12"	12-3/4"	323,9	299,9	12.00 *	553,73	10963	134158721	828524	110,6	1091632,7	268317441,8	1714004,89

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2

2.3 TUBERÍA DE ACERO ESTRUCTURAL CUADRADA.



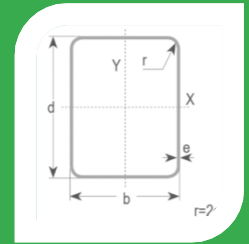
REFERENCIA	REAL		ESPESOR PARED	PESO TEÓRICO CALCULADO	ÁREA A	FLEXIÓN			MÓDULO PLÁSTICO	MOMENTO DE INERCIA TORCIONAL	CONSTANTE DE CORTE TORSIONAL
						I _x	S _x	r _x			
Tubería Cuadrada	d [mm]	b [mm]	e [mm]	[kg / m]	[mm ²]	[mm ⁴]	[mm ³]	[mm]	[mm ³]	J [mm ⁴]	C [mm ³]
50 x 50	50	50	1,5	2,24	281,3	101366,5	4054,7	19,66	4723,7	160183,2	6580,74
50 x 50	50	50	2	2,93	366,8	128768,8	5150,8	19,39	6076,1	207506,3	8596,09
50 x 50	50	50	2,5	3,6	448,2	153122,5	6124,9	19,12	7319,6	251938,8	10520,46
60 x 60	60	60	2	3,56	446,8	229847,7	7661,6	23,48	8962,6	365542,6	12549,71
60 x 60	60	60	2,5	4,39	548,2	275865,8	9195,5	23,22	10870,7	446052,3	15419,24
60 x 60	60	60	3	5,19	645,4	317514,9	10583,8	22,95	12648,2	522420,3	18179,36
70 x 70	70	70	2	4,19	526,8	373395,6	10668,4	27,57	12407,1	588463,2	17247,32
70 x 70	70	70	2,5	5,17	648,2	451016,8	12886,2	27,31	15119,3	720622,4	21248,01
70 x 70	70	70	3	6,13	765,4	522589,2	14931,1	27,04	17678,1	847043,8	25122
90 x 90	90	90	2,5	6,74	848,2	995742,5	22127,6	35,49	25708,9	1566932,5	35695,56
90 x 90	90	90	3	8,01	1005,4	1163603,9	25857,9	35,22	30248,9	1850559,5	42355,27
100 x 100	100	100	2,5	7,53	948,2	1383917,1	27678,3	39,57	32050	2166572,5	44314,34
100 x 100	100	100	3	8,96	1125,4	1621864,1	32437,3	39,31	37789,7	2562931,7	52645,9
100 x 100	100	100	4	11,73	1467,3	2060301,2	41206	38,78	48609	3320100,2	68768,74
100 x 100	100	100	6	16,98	2101,5	2792252,3	55845	37,69	67643	4697060,9	98821,79
120 x 120	120	120	4	14,25	1787,3	3677562,9	61292,7	46,97	71701	5848682	100397,67
135 x 135	135	135	4	16,13	2027,3	5329923,9	78961,8	53,1	91949,5	8416637,9	128025,37
135 x 135	135	135	6	23,58	2941,5	7438252,5	110196	52,04	130737,4	12095905,5	186253,69
150 x 150	150	150	4	18,01	2267,3	7414726	98863	59,23	114709	11643882	159001,06
150 x 150	150	150	6	26,4	3301,5	10430274,8	139070	58,18	164055,4	16808007	232094,51
150 x 150	150	150	9	38,21	4728,3	14135777,2	188477	56,53	228295	23778870,6	333523,54
200 x 200	200	200	5	30,11	3792,7	22142673,8	221427	79,14	256400,3	34665159,2	354514,7
200 x 200	200	200	7	41,43	5193,7	29556279,9	295563	78,1	346471,6	47158128,6	486381,97
200 x 200	200	200	9	52,34	6528,3	36178243,1	361782	77,03	429529,2	58900089,8	612462,16
200 x 200	200	200	12.00 *	67,93	8405,9	44676036,6	446760	75,38	541143,8	75152973,7	790574,31
250 x 250	250	250	9	66,47	8328,3	73861649,3	590893	97,49	693538,3	118080455,5	975100,78
250 x 250	250	250	12.00 *	86,77	10806	92807158,8	742457	95,88	884943,4	152049635,1	1267865,19
300 x 300	300	300	10	89,04	11171	143654801	957699	117,4	1120327,8	228464140,8	1568713,62
300 x 300	300	300	12.00 *	105,61	13206	166884397	1112563	116,4	1312443	268928112,4	1856756,07

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2.4 TUBERÍA DE ACERO ESTRUCTURAL RECTANGULAR.



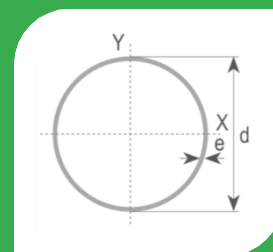
REFERENCIA	REAL		ESPESOR PARED	PESO TEÓRICO CALCULADO	ÁREA A	EJE X-X			EJE Y-Y			MÓDULO PLÁSTICO		MOMENTO DE INERCIA TORCIONAL	CONSTANTE DE CORTE TORSIONAL
						I_x	S_x	r_x	I_y	S_y	r_y	Z_y	Z_x		
Tubería rectangular	d [mm]	b [mm]	e [mm]	[kg / m]	[mm ²]	[mm ⁴]	[mm ³]	[mm]	[mm ⁴]	[mm ³]	[mm]	[mm ³]	[mm ³]	J [mm ⁴]	C [mm ³]
60 x 40	60	40	1,5	13,43	281,3	131434,7	4381,2	22,38	70855,6	3542,8	16,43	4020,2	5287,7	146909,4	6301,74
60 x 40	60	40	2	17,6	366,8	166953,4	5565,1	22,08	89797,1	4489,9	16,19	5166,4	6799,8	189984,6	8224,09
76 x 38	76	38	1,5	15,41	323,3	226016,4	5947,8	27,38	78036,5	4107,2	16,09	4577,7	7357	187101,4	7608,77
76 x 38	76	38	2	20,24	422,8	288708,9	7597,6	27,05	99256,1	5224	15,86	5903,3	9501,4	242174,1	9942,58
76 x 38	76	38	2,5	24,91	518,2	345270,3	9086,1	26,71	118216	6221,9	15,63	7130,9	11494	293766,6	12173,31
76 x 38	76	38	3	29,43	609,4	395817,1	10416,2	26,36	134999,3	7105,2	15,4	8261,7	13336,1	341977,6	14299,81
90 x 50	90	50	2	25,14	526,8	528621,3	11747,1	32,8	215021,2	8600,8	20,92	9657,7	14412,5	491438,4	15759,32
90 x 50	90	50	2,5	31,03	648,2	638217,6	14182,6	32,49	258896,4	10355,9	20,69	11753,4	17555,2	600243,7	19388,01
90 x 50	90	50	3	36,78	765,4	739067,5	16423,7	32,16	299026,7	11961,1	20,46	13724	20516,2	703673	22890
100 x 50	100	50	2	27,02	566,8	685336,8	13706,7	36,01	236584,3	9463,4	21,16	10553,1	16961,6	567626	17550,13
100 x 50	100	50	2,5	33,39	698,2	829276,3	16585,5	35,68	285339,9	11413,6	20,93	12861,8	20695,3	693723,1	21604,9
100 x 50	100	50	3	39,6	825,4	962560,7	19251,2	35,35	330154,4	13206,2	20,7	15041,2	24228,9	813760,8	25524,31
120 x 60	120	60	2,5	40,45	848,2	1472407,6	24540,1	43,15	508008,2	16933,6	25,35	18916,3	30409,1	1221492,5	31510,56
120 x 60	120	60	3	48,08	1005	1719587,3	28659,8	42,82	591680,8	19722,7	25,12	22225,2	35761,5	1438504,2	37333,27
150 x 100	150	100	4	89,24	1867	5424298	72324	55,81	2922825,2	58456,5	40,97	66517,1	87500,9	6084092,6	104584,9
150 x 100	150	100	6	130,15	2702	7519256,4	100257	54,58	4037361,7	80747,2	40	93986,2	123762	8688400	151508,15
200 x 70	200	70	4	96,78	2027	8815389,5	88153,9	68,29	1711431,2	48898	30,09	54394	113788	4795804,5	96591,37
200 x 70	200	70	6	141,46	2942	12236315	122363	66,74	2340879	66882,3	29,19	76613,8	161286	6763260,6	139102,69
200 x 100	200	100	4	108,08	2267	10965389	109654	72,03	3785349,1	75707	42,32	84425,2	135693	9082015,7	140401,06
200 x 100	200	100	6	158,41	3302	15400972	154010	70,69	5282471	105649	41,4	120329	193831	13020172,2	204194,51
250 x 100	250	100	5	157,11	3293	23271621	186173	87,06	5623177,3	112464	42,8	125063	236503	14939096,6	217176,95
250 x 150	250	150	5	180,66	3793	30270316	242163	92,54	13892041	185227	62,69	207629	293547	30272043,2	331264,7
300 x 100	300	100	5	180,66	3793	37112467	247416	102,5	6680916,3	133618	43,47	147232	319068	18877952,2	261514,7
300 x 100	300	100	7	248,59	5194	49360524	329070	100,9	8787786,2	175756	42,59	197602	430241	25330245,6	356181,97
300 x 100	300	100	9	314,03	6528	60166226	401108	99,34	10596297	211926	41,69	243225	532134	31189019,9	445062,16
300 x 150	300	150	8	319,3	6669	70865345	472436	106,7	24357558	324767	62,56	367269	591175	59486600,9	619014,59
300 x 150	300	150	10	392,93	8171	84691415	564609	105,4	28989513	386527	61,64	443418	714801	72129191,1	757660,62
300 x 150	300	150	12,00 *	464,08	9606	97019956	646800	104	33080247	441070	60,7	513462	828925	83930368,8	889719,75

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



2

2.5 TUBERÍA DE ACERO NEGRA Y GALVANIZADA - CERRAMIENTO



CARACTERÍSTICAS Y DENOMINACIÓN		ESPESOR DE PARED (pulg.)	ESPESOR DE PARED (mm.)	PESO DEL TUBO NEGRO DE 6 MTS (Kg.)	PESO DEL TUBO GALVANIZADO DE 6 M (Kg.)
DIAMETRO NOMINAL NPS (pulg.)	DIAMETRO EXTERIOR (pulg.)				
1/2	0.806	0.047	1.20	3.403	3.595
	0.806	0.059	1.50	4.205	4.390
	0.815	0.075	1.90	5.295	5.474
	0.815	0.090	2.29	6.225	6.396
	0.815	0.098	2.49	6.703	6.871
3/4	1.017	0.047	1.20	4.349	4.598
	1.017	0.059	1.50	5.392	5.635
	1.028	0.075	1.90	6.819	7.056
	1.028	0.090	2.29	8.054	8.283
	1.028	0.098	2.49	8.695	8.919
1	1.028	0.105	2.67	9.246	9.467
	1.296	0.047	1.20	5.600	5.295
	1.296	0.059	1.50	6.963	7.281
	1.296	0.075	1.90	8.736	9.046
	1.296	0.090	2.29	10.303	10.603
1	1.296	0.098	2.49	11.200	11.497
	1.315	0.105	2.67	12.121	12.419
	1.315	0.116	2.95	13.269	13.561
	1.315	0.128	3.25	14.495	14.781
	1.663	0.047	1.20	7.245	7.669
1-1/4	1.663	0.059	1.50	9.208	9.445
	1.663	0.075	1.90	11.362	11.771
	1.638	0.090	2.29	13.291	13.685
	1.641	0.098	2.49	14.426	14.816
	1.663	0.105	2.67	15.606	15.999
1-1/2	1.663	0.116	2.95	17.120	17.506
	1.663	0.128	3.25	18.744	19.124
	1.900	0.047	1.20	8.308	8.796
	1.900	0.059	1.50	10.362	10.843
	1.900	0.075	1.90	13.058	13.530
1-1/2	1.885	0.090	2.29	15.412	15.872
	1.883	0.098	2.49	16.688	17.144
	1.885	0.105	2.67	17.830	18.282
	1.885	0.116	2.95	19.576	20.023
	1.885	0.128	3.25	21.455	21.895
2	2.360	0.047	1.20	10.371	10.983
	2.360	0.059	1.50	12.951	13.557
	2.360	0.075	1.90	16.349	16.946
	2.360	0.090	2.29	19.490	20.079
	2.360	0.098	2.49	21.148	21.732
2	2.360	0.105	2.67	22.588	23.169
	2.360	0.116	2.95	21.833	25.408
	2.360	0.128	3.25	27.255	27.823
2-1/2	2.850	0.090	2.29	23.697	24.818
	2.850	0.098	2.49	25.729	26.446
	2.850	0.105	2.67	27.497	28.209
	2.850	0.116	2.95	30.255	30.962
	2.850	0.128	3.25	33.239	33.939
3	3.474	0.090	2.29	29.055	29.944
	3.474	0.098	2.49	31.563	32.448
	3.474	0.105	2.67	33.747	34.629
	3.474	0.116	2.95	37.161	38.036
	3.474	0.128	3.25	40.859	41.728
4	4.468	0.090	2.29	37.590	38.747
	4.468	0.098	2.49	40.856	42.009
	4.468	0.105	2.67	43.704	44.854
	4.468	0.116	2.95	48.161	49.305
	4.468	0.128	3.25	52.997	54.134

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



3

3.1 BARRAS CORRUGADAS



DESIGNACIÓN DE LAS BARRAS SEGÚN NÚMERO	
BARRAS	% DE ALARGAMIENTO
2, 3, 4, 5, 6	14%
7, 8, 9, 10, 11	12%

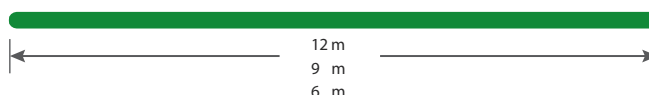
PROPIEDADES MECÁNICAS	
LÍMITE DE FLUENCIA	RESISTENCIA A LA TRACCIÓN
Mínimo 420 MPA 60.000 P.S.I 24 KgF/mm ²	Mínimo 550 M.P.A 80.000 P.S.I
Mínimo 540 MPA 78.000 P.S.I 55 KgF/mm ²	(Distancia entre marcas 200 mm)

DIMENSIONES NOMINALES Y TOLERANCIAS MAXIMAS BARRAS CORRUGADAS

DESIGNACIÓN		DIAMETRO NOMINAL	ÁREA SECCIÓN	PERÍMETRO	DISTANCIA PROMEDIO MAX. RESALTES	ALTURA MAX. RESALTES Y VENAS	ANCHO MAX. DE VENAS	MASA POR METRO LINEAL	TOLERANCIA EN LONG.	TOLERANCIA EN PESO	
										LOTE	INDIVI.
No.	PULG.	MM	MM ²	MM	MM	MM	MM	KG/M.	MM	+	+
3	3/8	9.53	71.40	30.00	6.70	0.42	3.60	0.57	-0.00 +1.25	4	6
4	1/2	12.70	129.00	39.90	8.90	0.51	4.80	1.00	-0.00 +1.25	4	6
5	5/8	15.90	200.00	49.90	11.10	0.63	6.00	1.56	-0.00 +1.25	4	6
6	3/4	19.10	284.00	59.80	13.30	0.95	7.20	2.25	-0.00 +1.25	4	6
7	7/8	22.20	387.00	69.80	15.60	1.11	8.40	3.06	-0.00 +1.25	4	6
8	1	25.40	510.00	79.80	17.80	1.27	9.70	4.00	-0.00 +1.25	4	6
9	1-1/8	28.70	645.00	90.00	20.00	1.43	10.90	5.06	-0.00 +1.25	4	6
10	1-1/4	32.30	819.00	101.40	22.40	1.60	12.20	6.35	-0.00 +1.25	4	6
11	1-3/8	35.80	1,006.00	112.50	25.20	1.80	13.70	8.04	-0.00 +1.25	4	6

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial

MEDIDAS DE LARGO COMERCIALES



3

3.2 VARILLAS O REDONDOS LISOS



PROPIEDADES MECANICAS

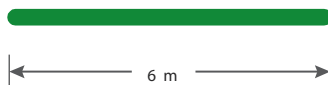
LIMITE DE FLUENCIA	RESISTENCIA A LA TRACCIÓN
Mínimo 236 MPA 34.1 00 P.S.I.	Mínimo 362 M.P.A 53.000 G36 P.S.I.
Máximo 538 MPA 78.1 00 P.S.I.	Alargamiento Mínimo 18%
	(Distancia entre marcas 200 mm.)

DIMENSIONES

DIMENSIONES						
DIÁMETRO NOMINAL						
PULGADAS		MM.	AREA SECCIÓN	PERÍMETRO	MASA	FORMA
No.			MM2	MM	KG/M.	SUMINISTRO
2	1/4	6.35	32	19.9	0.25	Rollos
3	3/8	9.52	71.2	29.9	0.56	Rollos
		10.50	86.60	33.00	0.68	Barras
		12.00	113.10	37.00	0.89	Barras
4	1/2	12.70	126.70	39.90	1.00	Barras
		15.00	176.80	47.20	1.39	Barras
5	5/8	15.89	197.80	49.80	1.55	Barras
6	3/4	19.05	285.00	59.80	2.24	Barras
7	7/8	22.22	387.80	69.80	3.05	Barras
8	1	25.40	506.70	79.70	3.99	Barras
9	1-1/8	28.57	645	90	5.06	Barras
10	1-1/4	31.75	819	101.3	6.404	Barras

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial

LARGOS MÁS COMERCIALES



3

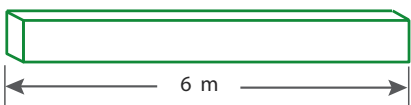
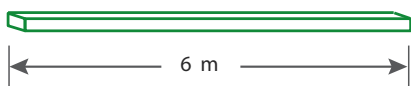
3.3 PLATINAS Y CUADRADOS



PLATINAS			
MEDIDAS	KG./M	KG./ UNID.	AREA
HXB		6M.	CM2
1/8x1/2	0.32	1.92	0.40
1/8x5/8	0.40	2.40	0.50
1/8x3/4	0.48	2.88	0.60
1/8x1	0.63	3.78	0.81
1/8x1.1/4	0.79	4.74	1.01
1/8x1.1/2	0.95	5.70	1.21
1/8x2	1.27	7.62	1.61
1/8x2.1/2	1.58	9.48	2.01
1/8x3	1.90	11.40	2.42
3/16x1/2	0.48	2.88	0.60
3/16x5/8	0.60	3.60	0.76
3/16x3/4	0.71	4.26	0.91
3/16x1	0.95	5.70	1.21
3/16x1 1/4	1.19	7.14	1.51
3/16x1 1/2	1.43	8.58	1.81
3/16x2	1.90	11.40	2.42
3/16x2 1/2	2.38	14.28	3.02
3/16x3	2.85	17.10	3.63
3/16x4	3.80	22.80	4.84
1/4x1/2	0.64	3.84	0.81
1/4x5/8	0.79	4.74	1.01
1/4x3/4	0.95	5.70	1.21
1/4x1	1.27	7.62	1.61
1/4x1 1/4	1.59	9.54	2.02
1/4x1.1/2	1.90	11.40	2.42
1/4x2	2.53	15.18	3.23
1/4x2.1/2	3.17	19.02	4.03
1/4x3	3.80	22.80	4.84
1/4x4	5.07	30.42	6.45
3/8x1	1.90	11.40	2.42
3/8x1.1/2	2.85	17.10	3.63
3/8x2	3.80	22.80	4.84
3/8x2.1/2	4.75	28.50	6.05
3/8x3	5.70	34.20	7.25
3/8x4	7.60	45.60	9.67

PLATINAS			
MEDIDAS	KG./M	KG./ UNID.	AREA
HXB		6M.	CM2
1/2x1	2.53	15.18	3.23
1/2x1.1/2	3.80	22.80	4.84
1/2x2	5.07	30.42	6.45
1/2x2.1/2	6.33	37.98	8.06
1/2x3	7.60	45.60	9.68
1/2x4	10.13	60.78	12.90
1/2x5	12.66	75.96	16.13
1/2x6	15.20	91.20	19.35
5/8x1.1/2	4.75	18.50	6.05
5/8x2	6.33	37.98	8.06
5/8x2.1/2	7.92	47.52	10.06
5/8x3	9.50	57.00	12.09
5/8x4	12.66	75.96	16.12
5/8x5	15.83	94.98	20.15
5/8x6	18.99	113.94	24.19
3/4x1.1/2	5.70	34.20	7.26
3/4x2	7.60	45.60	9.68
3/4x3	11.40	68.40	15.52
3/4x4	15.20	91.20	19.35
3/4x5	18.99	113.94	24.19
3/4x6	22.79	136.74	29.03
7/8x2	8.87	53.22	11.29
7/8x3	13.30	79.80	16.93
7/8x4	17.73	106.38	22.58
7/8x5	22.16	132.96	26.22
7/8x6	26.59	159.54	33.86
1x2	10.13	60.78	12.90
1x3	15.20	91.20	19.35
1x4	20.26	121.56	25.81
1x5	25.33	151.98	32.26
1x6	30.39	182.34	38.71

LARGOS MÁS COMERCIALES



CUADRADOS			
MEDIDAS	KG./M	KG. / UNID.	AREA
B=B		6M.	CM2
9mm.	0.64	3.84	0.81
11mm.	0.95	5.70	1.21
12mm.	1.13	6.78	1.44
1/2"	1.27	7.62	1.61
9/16"	1.60	9.60	2.04
5/8"	1.98	11.88	2.52
3/4"	2.85	17.10	3.63
7/8"	3.88	23.28	4.94
1"	5.07	30.42	6.45



4

DENOMINACIÓN CALIDAD PERFIL TIPO EUROPEO

S 355 J2 G3 Z35



S

Tipo de Acero
S = Acero Estructural



355

Propiedades Mecánicas
355
Límite elástico mínimo en MPa



J2

Designación de calidad con respecto a la soldabilidad y resistencia a la fractura fragil.

JR Longitudinal 27J + 20 °C
JO Longitudinal 27J - 0 °C
J2 Longitudinal 27J - 20 °C
K2 Longitudinal 40J - 20 °C



G3

Método de desoxidación

G1 No calmado
G2 Calmado
G3 Condición especial



Z 35

Propiedades frente al desgarro laminar se expresa en términos de reducción del área.

Z 15 min 15%
Z 25 min 25%
Z 35 min 35%



M

Estado de entrega

+ M - Laminado Termomecánico
+ N - Laminado de Normalización
+ L - Para bajas temperaturas
+ W - Resistentes a la corrosión atmosférica
+ AR - As Rolled
+ H - Para altas temperaturas

La identificación de las normas europeas en cada país miembro se inicia con las letras de referencia del respectivo país, ejemplo:

- EN: (Approved European standard) Norma Europea: "S 355 J2 G3 Z35"
- BS: (British Standard) BSI Reino Unido: "BS 40D"
- DIN: DIN Alemania: "St 37-3N"
- NF: AFNOR de Francia: "NF A E24-4"



4

4.1 PERFIL TIPO EUROPEO -CALIDADES DE ACERO

CALIDADES DE ACERO UTILIZADO PARA FABRICACIÓN DE PERFILES EUROPEOS (HE, HD, HL, HP, IPE, IPN, UPN, UPE, L)

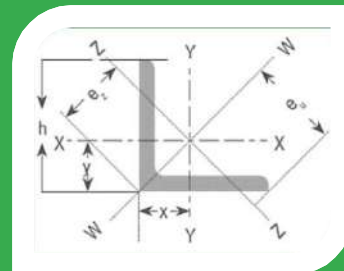
CALIDADES MÁS COMUNES	COMPOSICIÓN QUÍMICA													PROPIEDADES MECÁNICAS				
	L	C	MN	P	S	Si	CU	Ni	Cr	Mo	Nb	V	CE	LÍMITE ELÁSTICO		RESISTENCIA A LA TRACCIÓN		% ALARGA
EN 10025:1990		‰	‰	‰	‰	‰	‰	‰	‰	‰	‰	‰	‰					
S235JRG2	MIN	0,170												20Kg/mm2	195MPa	35Kg/ mm2	340MPa	22
	MAX	0,200	1,400	0,045	0,045			0,009					0,380	24Kg/mm2	235MPa	48Kg/ mm2	470MPa	26
S235JO	MIN													20Kg/mm2	195MPa	35Kg/ mm2	340MPa	22
	MAX	0,170	1,400	0,040	0,040			0,009					0,380	24Kg/mm2	235MPa	48Kg/ mm2	470MPa	26
S235JRG3/4	MIN													20Kg/mm2	195MPa	35Kg/ mm2	340MPa	22
	MAX	0,170	1,400	0,035	0,035								0,380	24Kg/mm2	235MPa	48Kg/ mm2	470MPa	26
S275JR	MIN													22Kg/mm2	225MPa	41Kg/ mm2	400MPa	18
	MAX	0,220	1,500	0,045	0,045			0,009					0,420	28Kg/mm2	275MPa	55Kg/ mm2	540MPa	22
S275JO	MIN													22Kg/mm2	225MPa	41Kg/ mm2	400MPa	18
	MAX	0,180	1,500	0,040	0,040			0,009					0,420	28Kg/mm2	275MPa	55Kg/ mm2	540MPa	22
S275J2G3/4	MIN													22Kg/mm2	225MPa	41Kg/ mm2	400MPa	18
	MAX	0,180	1,500	0,035	0,035								0,420	28Kg/mm2	275MPa	55Kg/ mm2	540MPa	22
S355JR	MIN													30Kg/mm2	295MPa	48Kg/ mm2	470MPa	18
	MAX	0,240	1,600	0,045	0,045	0,550		0,009					0,470	36Kg/mm2	355MPa	65Kg/ mm2	630MPa	22
S355JO	MIN													30Kg/mm2	295MPa	48Kg/ mm2	470MPa	18
	MAX	0,220	1,600	0,040	0,040	0,550		0,009					0,470	36Kg/mm2	355MPa	65Kg/ mm2	630MPa	22
S355J2G3/G4	MIN													30Kg/mm2	295MPa	48Kg/ mm2	470MPa	18
	MAX	0,220	1,600	0,035	0,035	0,550							0,470	36Kg/mm2	355MPa	65Kg/ mm2	630MPa	22
S355K2G3/G4	MIN													30Kg/mm2	295MPa	48Kg/ mm2	470MPa	18
	MAX	0,220	1,600	0,035	0,035	0,550							0,470	36Kg/mm2	355MPa	65Kg/ mm2	630MPa	22

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



4

4.2 PERFILES EN L / ÁNGULOS DE LADOS IGUALES(MILIMÉTRICOS).



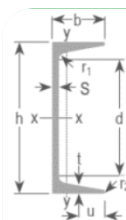
ANGULOS TIPO EUROPEO DE LADOS IGUALES																	
PERFILES EN L		DIMENSIONES Y PROPIEDADES PARA EL DISEÑO															
		DIMENSIONES				DISTANCIAS DE LOS EJES			AREA	PESO	PROPIEDADES ELASTICAS						
DESIGNACIÓN	ALTURA=ALA		RADIOS		EJES			lx			Sx	rx	EJE W-W		EJE Z-Z		
	h	s	r1	r2	x=y	w	z		cm4	cm3			cm	lw	rw	lz	Sz
	mm	mm	mm	mm	cm	cm	cm	cm2	kg/mt				cm4	cm	cm4	cm	cm
L 3 X 20	20.00	3.00	3.50	2.00	0.60	1.41	0.85	1.12	0.88	0.39	0.28	0.59	0.62	0.74	0.15	0.18	0.37
L 3 X 25	25.00	3.00	3.50	2.00	0.72	1.77	1.02	1.43	1.12	0.80	0.45	0.75	1.26	0.94	0.33	0.33	0.48
L 3 X 30	30.00	3.00	3.50	2.50	0.84	2.12	1.18	1.74	1.36	1.40	0.65	0.90	2.23	1.13	0.58	0.49	0.58
L 3 X 35	35.00	3.00	5.00	2.50	0.96	2.47	1.36	2.04	1.60	2.29	0.90	1.06	3.63	1.34	0.95	0.70	0.68
L 4 X 25	25.00	4.00	3.50	2.00	0.76	1.77	1.07	1.86	1.46	1.01	0.58	0.74	1.60	0.93	0.43	0.40	0.48
L 4 X 30	30.00	4.00	5.00	2.50	0.88	2.12	1.24	2.27	1.78	1.80	0.85	0.89	2.85	1.12	0.75	0.61	0.58
L 4 X 35	35.00	4.00	5.00	2.50	1.00	2.47	1.42	2.67	2.09	2.95	1.18	1.05	4.68	1.33	1.23	0.86	0.68
L 4 X 40	40.00	4.00	6.00	3.00	1.12	2.83	1.58	3.08	2.42	4.47	1.55	1.21	7.09	1.52	1.86	1.17	0.78
L 4 X 45	45.00	4.00	7.00	3.50	1.23	3.18	1.75	3.49	2.74	6.43	1.97	1.36	10.20	1.71	2.67	1.55	0.88
L 4 X 50	50.00	4.00	7.00	3.50	1.36	3.54	1.92	3.89	3.06	8.97	2.46	1.52	14.20	1.91	3.72	1.94	0.98
L 4 X 75	75.00	4.00	9.00	4.50	1.96	5.30	2.76	5.93	4.65	31.43	5.67	2.30	49.85	2.90	13.01	-	1.48
L 5 X 40	40.00	5.00	6.00	3.00	1.16	2.83	1.64	3.79	2.97	5.43	1.91	1.20	8.61	1.51	2.25		0.77
L 5 X 50	50.00	5.00	7.00	3.50	1.40	3.54	1.99	4.80	3.77	11.00	3.05	1.52	17.40	1.90	4.54	2.29	0.97
L 5 X 60	60.00	5.00	8.00	4.00	1.64	4.24	2.32	5.82	4.57	19.40	4.45	1.82	30.70	2.30	8.02	3.45	1.17
L 5 X 75	75.00	5.00	9.00	4.50	2.01	5.30	2.84	7.34	5.76	38.77	7.06	2.30	61.59	2.90	15.96		1.47
L 6 X 40	40.00	6.00	6.00	3.00	1.20	2.83	1.70	4.48	3.52	6.31	2.26	1.19	9.98	1.49	2.65	1.56	0.77
L 6 X 50	50.00	6.00	7.00	3.50	1.45	3.54	2.04	5.69	4.47	12.80	3.61	1.50	20.30	1.89	5.33	2.61	0.97
L 6 X 60	60.00	6.00	8.00	4.00	1.69	4.24	2.39	6.91	5.42	22.80	5.29	1.82	36.20	2.29	9.43	3.95	1.17
L 6 X 70	70.00	6.00	9.00	4.50	1.93	4.95	2.73	8.13	6.38	36.90	7.27	2.13	58.50	2.68	15.30	5.59	1.37
L 6 X 75	75.00	6.00	9.00	4.50	2.05	5.30	2.90	8.73	6.85	45.83	8.41	2.29	72.84	2.89	18.82	-	1.47
L 6 X 100	100.00	6.00	12.00	6.00	2.64	7.07	3.74	11.80	9.26	111.10	15.08	3.07	176.30	3.87	45.80	-	1.97
L 7 X 50	50.00	7.00	7.00	3.50	1.49	3.54	2.10	6.56	5.15	10.96	3.05	1.51	17.41	1.90	4.52		0.97
L 7 X 65	65.00	7.00	9.00	4.50	1.85	4.60	2.65	8.70	6.83	33.43	7.18	1.96	53.08	2.47	13.78		1.26
L 7 X 75	75.00	7.00	9.00	4.50	2.10	5.30	2.96	10.10	7.93	52.61	9.74	2.28	83.60	2.88	21.62	-	1.46
L 7 X 100	100.00	7.00	12.00	6.00	2.69	7.07	3.81	13.70	10.70	128.20	17.54	3.06	203.70	3.86	52.72	-	1.96
L 8 X 50	50.00	8.00	7.00	3.50	1.52	3.54	2.16	7.41	5.82	16.30	4.68	1.48	25.70	1.86	6.87	3.19	0.96
L 8 X 60	60.00	8.00	8.00	4.00	1.77	4.24	2.50	9.03	7.09	29.20	6.89	1.80	46.20	2.26	12.20	4.86	1.16
L 8 X 75	75.00	8.00	9.00	4.50	2.14	5.30	3.02	11.40	8.99	59.13	11.03	2.27	93.91	2.86	24.35	-	1.46
L 8 X 100	100.00	8.00	12.00	6.00	2.74	7.07	3.87	15.50	12.20	145.00	19.90	3.06	230.00	3.85	59.80	15.50	1.96
L 10 X 75	75.00	10.00	9.00	4.50	2.22	5.30	3.13	14.10	11.10	71.43	13.52	2.25	113.20	2.83	29.68		1.45
L 10 X 100	100.00	10.00	12.00	6.00	2.82	7.07	3.99	19.20	15.00	177.00	24.60	3.04	280.00	3.83	72.90	18.30	1.95
L 10 X 120	120.00	10.00	13.00	6.50	3.31	8.49	4.69	23.20	18.20	313.00	36.00	3.67	497.00	4.63	129.00	27.50	2.36
L 10 X 150	150.00	10.00	16.00	8.00	4.03	10.61	5.71	29.30	23.00	624.00	56.91	4.62	992.00	5.82	256.10		2.96
L 12 X 80	80.00	12.00	10.00	5.00	2.41	5.66	3.41	17.90	14.00	102.00	18.20	2.39	161.00	3.00	42.70	12.50	1.55
L 12 X 100	100.00	12.00	12.00	6.00	2.90	7.07	4.11	22.70	17.80	207.00	29.10	3.02	328.00	3.80	85.70	20.90	1.94
L 12 X 120	120.00	12.00	13.00	6.50	3.40	8.49	4.80	27.50	21.60	368.00	42.70	3.65	584.00	4.60	152.00	31.50	2.35
L 12 X 150	150.00	12.00	16.00	8.00	4.12	10.60	5.83	34.80	27.30	737.00	67.70	4.60	1.170.00	5.80	303.00	52.00	2.95
L 15 X 120	120.00	15.00	13.00	6.50	3.51	8.49	4.97	33.90	26.60	444.90	52.43	3.62	705.60	4.56	184.20		2.33
L 15 X 150	150.00	15.00	16.00	8.00	4.25	10.60	6.01	43.00	33.80	898.00	83.50	4.57	1.430.00	5.76	370.00	61.60	2.93
L 15 X 200																	
L 20 X 150	150.00	20.00	16.00	8.00	4.44	10.61	6.28	56.30	44.20	1.146.00	108.60	4.51	1.817.00	5.68	476.20		2.91
L 20 X 200	200.00	20.00	18.00	9.00	5.68	14.10	8.04	76.30	59.90	2.850.00	199.00	6.11	4.530.00	7.70	1.170.00	146.00	3.92
L 25 X 200	200.00	25.00	18.00	9.00	5.88	14.14	8.31	94.10	73.90	3.446.00	244.00	6.05	5.467.00	7.62	1.426.00		3.89
L 25 X 250	250.00	25.00	18.00	9.00	7.13	17.68	10.08	119.00	93.50	6.986.00	390.90	7.66	11.110.00	9.66	2.861.00		4.90

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.3 PERFILES EN U / CESTÁNDAR EUROPEO - UPN Y PERFIL C SECCIÓN PEQUEÑA.



PERFIL C ESTANDAR EUROPEO - UPN																
PERFILES UPN		DIMENSIONES Y PROPIEDADES PARA EL DISEÑO														
		DIMENSIONES						AREA	PESO	PROPIEDADES ELASTICAS						CONS TORS
		ALTURA		ALA		DISTANCIAS				EJE X-X			EJE Y-Y			
DESIGNACIÓN	h	s	b	t	r1	r2	d	cm²	kg/mt	lx	Sx	rx	ly	Sy	ry	Jt
	mm	mm	mm	mm	mm	mm	mm			cm4	cm3	cm	cm4	cm3	cm	cm4
UPN 80	80.00	6.00	45.00	8.00	8.00	4.00	46.00	11.00	8.64	106.00	26.50	3.10	19.40	6.36	1.33	2.16
UPN 100	100.00	6.00	50.00	8.50	8.50	4.50	64.00	13.50	10.60	206.00	41.20	3.91	29.30	8.49	1.47	2.81
UPN 120	120.00	7.00	55.00	9.00	9.00	4.50	82.00	17.00	13.40	364.00	60.70	4.62	43.20	11.10	1.59	4.15
UPN 140	140.00	7.00	60.00	10.00	10.00	5.00	98.00	20.40	16.00	605.00	86.40	5.45	62.70	14.80	1.75	5.68
UPN 160	160.00	7.50	65.00	10.50	10.50	5.50	115.00	24.00	18.80	925.00	116.00	6.21	85.30	18.30	1.89	7.39
UPN 180	180.00	8.00	70.00	11.00	11.00	5.50	133.00	28.00	22.00	1350.00	150.00	6.95	114.00	22.40	2.02	9.55
UPN 200	200.00	8.50	75.00	11.50	11.50	6.00	151.00	32.20	25.30	1910.00	191.00	7.70	148.00	27.00	2.14	11.90
UPN 220	220.00	9.00	80.00	12.50	12.50	6.50	167.00	37.40	29.40	2690.00	245.00	8.48	197.00	33.60	2.30	16.00
UPN 240	240.00	9.50	85.00	13.00	13.00	6.50	184.00	42.30	33.20	3600.00	300.00	9.22	248.00	39.60	2.42	19.70
UPN 260	260.00	10.00	90.00	14.00	14.00	7.00	200.00	48.30	37.90	4820.00	371.00	9.99	317.00	47.70	2.56	25.50
UPN 280	280.00	10.00	95.00	15.00	15.00	7.50	216.00	53.30	41.80	6280.00	448.00	10.90	399.00	57.20	2.74	31.00
UPN 300	300.00	10.00	100.00	16.00	16.00	8.00	232.00	58.80	46.20	8030.00	535.00	11.70	495.00	67.80	2.90	37.40
UPN 320	320.00	14.00	100.00	17.00	17.50	8.75	246.00	75.80	59.50	10870.00	679.00	12.10	597.00	80.60	2.81	66.70
UPN 350	350.00	14.00	100.00	16.00	16.00	8.00	282.00	77.30	60.60	12840.00	734.00	12.90	570.00	75.00	2.70	61.20
UPN 380	380.00	13.50	102.00	16.00	16.00	8.00	313.00	80.40	63.10	15760.00	829.00	14.00	615.00	78.70	2.77	59.10
UPN 400	400.00	14.00	110.00	18.00	18.00	9.00	324.00	91.50	71.80	20350.00	1020.00	14.90	846.00	102.00	3.04	81.60

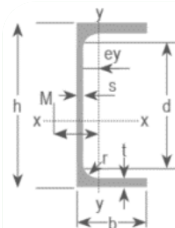
PERFIL C EUROPEO SECCION PEQUEÑA - U																
PERFILES U	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO															
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						CONS TORS
DESIGNACIÓN	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y			
	h	s	b	t	r1	r2	d			lx	Sx	rx	ly	Sy	ry	Jt
	mm	mm	mm	mm	mm	mm	mm	cm²	kg/ mt	cm4	cm3	cm	cm4	cm3	cm	cm4
U 30 X 15	30.00	4.00	15.00	4.50	4.50	2.00	12.00	2.21	1.74	2.53	1.69	1.07	0.38	0.39	0.42	0.165
U 40 X 20	40.00	5.00	20.00	5.50	5.00	2.50	18.00	3.66	2.87	7.58	3.79	1.44	1.14	0.86	0.56	0.363
U 40 X 35	40.00	5.00	35.00	7.00	7.00	3.50	11.00	6.21	4.87	14.10	7.05	1.50	6.68	3.08	1.04	1.00
U 50 X 25	50.00	5.00	25.00	6.00	6.00	3.00	25.00	4.92	3.86	16.80	6.73	1.85	2.49	1.48	0.71	0.878
U 50 X 38	50.00	5.00	38.00	7.00	7.00	3.50	20.00	7.12	5.59	26.40	10.60	1.92	9.12	3.75	1.13	1.12
U 60 X 30	60.00	6.00	30.00	6.00	6.00	3.00	35.00	6.46	5.07	31.60	10.50	2.21	4.51	2.16	0.84	0.939
U 65 X 42	65.00	5.50	42.00	7.50	7.50	4.00	33.00	9.03	7.09	57.50	17.70	2.52	14.10	5.07	1.25	1.61
U 70 X 40	70.00	6.00	40.00	6.50	6.50	3.25	42.00	8.62	6.77	61.80	17.60	2.68	13.00	4.85	1.22	

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.4 PERFILES C DE ALAS PARALELAS UPE, ESPAÑA Y POLONIA.



PERFIL C ALAS PARALELAS - UPE - ESPAÑA

PERFILES UPE	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO													
	DIMENSIONES					AREA	PESO	PROPIEDADES ELASTICAS						CONS TORS
	ALTURA		ALA					EJE X-X			EJE Y-Y			
	h	s	b	t	d			lx	Sx	rx	ly	Sx	ry	
DESIGNACIÓN	mm	mm	mm	mm	mm	cm ²	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm4
UPE80	80.00	4.00	50.00	7.00	66.00	10.10	7.90	107.00	26.80	3.26	25.40	7.98	1.59	
UPE 100	100.00	4.50	55.00	7.50	85.00	12.50	9.82	207.00	41.40	4.07	38.20	10.60	1.75	
UPE 120	120.00	5.00	60.00	8.00	104.00	15.40	12.10	364.00	60.60	4.86	55.40	13.80	1.90	
UPE 140	140.00	5.00	65.00	9.00	122.00	18.40	14.50	599.00	85.60	5.71	78.70	18.20	2.07	
UPE 160	160.00	5.50	70.00	9.50	141.00	21.70	17.00	911.00	114.00	6.48	107.00	22.60	2.22	
UPE 180	180.00	5.50	75.00	10.50	159.00	25.10	19.70	1.353.00	150.00	7.34	144.00	28.60	2.39	
UPE 200	200.00	6.00	80.00	11.00	178.00	29.00	22.80	1.909.00	191.00	8.11	187.00	34.40	2.54	
UPE 220	220.00	6.50	85.00	12.00	196.00	33.90	26.60	2.682.00	244.00	8.90	246.00	42.50	2.70	
UPE 240	240.00	7.00	90.00	12.50	217.00	38.50	30.20	3.599.00	300.00	9.67	311.00	50.10	2.84	
UPE 270	270.00	7.50	95.00	13.50	243.00	44.80	35.20	5.255.00	389.00	10.80	401.00	60.70	2.99	
UPE 300	300.00	9.50	100.00	15.00	270.00	56.60	44.40	7.823.00	522.00	11.80	538.00	75.60	3.08	
UPE 330	330.00	11.00	105.00	16.00	298.00	67.80	53.20	11.008.00	667.00	12.70	681.00	89.70	3.17	
UPE 360	360.00	12.00	110.00	17.00	326.00	77.90	61.20	14.825.00	824.00	13.80	844.00	105.00	3.29	
UPE 400	400.00	13.50	115.00	18.00	364.00	91.90	72.20	20.981.00	1.049.00	15.10	1.045.00	123.00	3.37	

PERFIL C ALAS PARALELAS - UPE

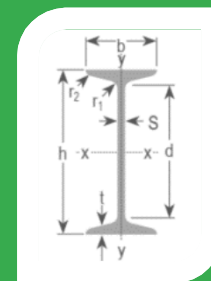
PERFILES UPE	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO															
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						CONS TORS
DESIGNACIÓN	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y			
	h	s	b	t	r1	r2	d			lx	Sx	rx	ly	Sy	ry	
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm4
UPE 80	80.00	4.50	40.00	7.40	5.50	2.50		9.00	7.10	89.00	22.40		12.80	4.75		
UPE 100	100.00	4.50	46.00	7.60	7.00	3.00		10.90	8.60	174.00	34.80		20.40	6.46		
UPE 120	120.00	4.80	52.00	7.80	7.50	3.00		13.30	10.40	304.00	50.60		31.20	8.52		
UPE 140	140.00	4.90	58.00	8.10	8.00	3.00		15.60	12.30	491.00	70.20		45.40	11.00		
UPE 160	160.00	5.00	64.00	8.40	8.50	3.50		18.10	14.20	747.00	93.40		63.30	13.80		
UPE 180	180.00	5.10	70.00	8.70	9.00	3.50		20.70	16.30	1.090.00	121.00		86.00	17.00		
UPE 200	200.00	5.20	76.00	9.00	9.50	4.00		23.40	18.40	1.520.00	152.00		113.00	20.50		
UPE 240	240.00	5.60	90.00	10.00	10.50	4.00		30.60	24.00	2.900.00	242.00		208.00	31.60		
UPE 270	270.00	6.00	95.00	10.50	11.00	4.50		35.20	27.70	4.160.00	308.00		262.00	37.30		
UPE 300	300.00	6.50	100.00	11.00	12.00	5.00		40.50	31.80	5.810.00	387.00		327.00	43.60		
UPE 400	400.00	8.00	115.00	13.50	15.00	6.00		61.50	48.30	15.220.00	761.00		642.00	73.40		

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.5 PERFIL I ESTÁNDAR EUROPEO - IPN.



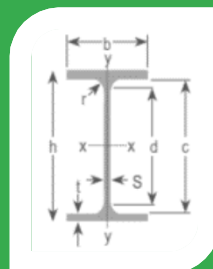
PERFIL I ESTANDAR EUROPEO - IPN																		
PERFILES IPN	Dimensiones y propiedades para el diseño																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r1	r2	d			lx	Sx	rx	ly	Sx	ry	Zx	Zy	Jt
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
IPN 80	80	3.90	42.00	5.90	3.90	2.30	59.00	7.57	5.94	77.80	19.50	3.20	6.29	3.00	0.91	22.80	4.99	0.87
IPN 100	100	4.50	50.00	6.80	4.50	2.70	75.00	10.60	8.34	171.00	34.20	4.01	12.20	4.88	1.07	39.80	8.09	1.60
IPN 120	120	5.10	58.00	7.70	5.10	3.10	92.00	14.20	11.10	328.00	54.70	4.81	21.50	7.41	1.23	63.60	12.30	2.71
IPN 140	140	5.70	66.00	8.60	5.70	3.40	109.00	18.20	14.30	573.00	81.90	5.61	35.20	10.70	1.40	95.40	17.90	4.32
IPN 160	160	6.30	74.00	9.50	6.30	3.80	125.00	22.80	17.90	935.00	117.00	6.40	54.70	14.80	1.55	136.00	24.90	6.57
IPN 180	180	6.90	82.00	10.40	6.90	4.10	142.00	27.90	21.90	1450.00	161.00	7.20	81.30	19.80	1.71	187.00	33.20	9.58
IPN 200	200	7.50	90.00	11.30	7.50	4.50	159.00	33.40	26.20	2140.00	214.00	8.00	117.00	26.00	1.87	250.00	43.50	13.50
IPN 220	220	8.10	98.00	12.20	8.10	4.90	176.00	39.50	31.10	3060.00	278.00	8.80	162.00	33.10	2.02	324.00	55.70	18.60
IPN 240	240	8.70	106.00	13.10	8.70	5.20	192.00	46.10	36.20	4250.00	354.00	9.59	221.00	41.70	2.20	412.00	70.00	25.00
IPN 260	260	9.40	113.00	14.10	9.40	5.60	208.00	53.30	41.90	5740.00	442.00	10.40	288.00	51.00	2.32	514.00	85.90	33.50
IPN 280	280	10.10	119.00	15.20	10.10	6.10	225.00	61.00	47.90	7590.00	542.00	11.10	364.00	61.20	2.45	632.00	103.00	44.20
IPN 300	300	10.80	125.00	16.20	10.80	6.50	241.00	69.00	54.20	9800.00	653.00	11.90	451.00	72.20	2.56	762.00	121.00	56.80
IPN 320	320	11.50	131.00	17.30	11.50	6.90	258.00	77.70	61.00	12510.00	782.00	12.70	555.00	84.70	2.67	914.00	143.00	72.50
IPN 340	340	12.20	137.00	18.30	12.20	7.30	274.00	86.70	68.00	15700.00	923.00	13.50	674.00	98.40	2.80	1080.00	166.00	90.40
IPN 360	360	13.00	143.00	19.50	13.00	7.80	290.00	97.00	76.10	19610.00	1090.00	14.20	818.00	114.00	2.90	1276.00	194.00	115.00
IPN 380	380	13.70	149.00	20.50	13.70	8.20	306.00	107.00	84.00	24010.00	1260.00	15.00	975.00	131.00	3.02	1482.00	221.00	141.00
IPN 400	400	14.40	155.00	21.60	14.40	8.60	323.00	118.00	92.40	29210.00	1460.00	15.70	1160.00	149.00	3.13	1714.00	253.00	170.00
IPN 450	450	16.20	170.00	24.30	16.20	9.70	363.00	147.00	115.00	45850.00	2040.00	17.70	1730.00	203.00	3.43	2400.00	345.00	267.00
IPN 500	500	18.00	185.00	27.00	18.00	10.80	404.00	179.00	141.00	68740.00	2750.00	19.60	2480.00	268.00	3.72	3240.00	456.00	402.00
IPN 550	550	19.00	200.00	30.00	19.00	11.90	445.00	212.00	166.00	99180.00	3610.00	21.60	3490.00	349.00	4.02	4240.00	592.00	544.00
IPN 600	600	21.60	215.00	32.40	21.60	13.00	485.00	254.00	199.00	139000.00	4630.00	23.40	4670.00	434.00	4.30			

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.6 PERFIL LIVIANO DE ALAS PARALELAS - IPE



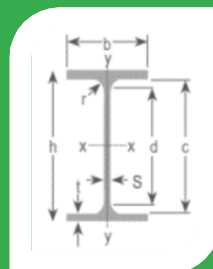
PERFIL I LIVIANO DE ALAS PARALELAS - IPE																		
PERFILES IPE	Dimensiones y propiedades para el diseño																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
DESIGNACIÓN	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry	Zx	Zy	
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/ mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
IPE 80	80.00	3.80	46.00	5.20	5.00	69.60	59.60	7.64	6.00	80.10	20.00	3.24	8.50	3.70	1.05	23.20	5.80	0.70
IPE 100	100.00	4.10	55.00	5.70	7.00	88.60	74.60	10.30	8.10	171.00	34.20	4.07	15.90	5.80	1.24	39.40	9.10	1.20
IPE A 120	117.60	3.80	64.00	5.10	7.00	107.40	93.40	11.00	8.66	257.00	43.80	4.83	22.40	7.00	1.42	49.90	11.00	1.04
IPE 120	120.00	4.40	64.00	6.30	7.00	107.40	93.40	13.20	10.40	318.00	53.00	4.90	27.70	8.60	1.45	60.70	13.60	1.74
IPE A 140	137.40	3.80	73.00	5.60	7.00	126.20	112.20	13.40	10.50	435.00	63.30	5.70	36.40	10.00	1.65	71.60	15.50	1.36
IPE 140	140.00	4.70	73.00	6.90	7.00	126.20	112.20	16.40	12.90	541.00	77.30	5.74	44.90	12.30	1.65	88.30	19.20	2.45
IPE R 140	142.00	5.30	72.00	7.80	7.00	126.40	112.40	18.40	14.40	611.00	86.10	5.77	48.80	13.50	1.63	99.10	21.30	3.43
IPE A 160	157.00	4.00	82.00	5.90	9.00	145.20	127.20	16.20	12.70	689.00	87.80	6.53	54.40	13.30	1.83	99.10	20.70	1.96
IPE 160	160.00	5.00	82.00	7.40	9.00	145.20	127.20	20.10	15.80	869.00	109.00	6.58	68.30	16.70	1.84	124.00	26.10	3.60
IPE R 160	162.00	5.60	81.00	8.50	9.00	145.00	127.00	22.60	17.70	989.00	122.00	6.62	75.70	18.70	1.83	140.00	29.40	5.13
IPE A 180	177.00	4.30	91.00	6.50	9.00	164.00	146.00	19.60	15.40	1.063.00	120.00	7.37	81.90	18.00	2.05	135.00	28.00	2.70
IPE 180	180.00	5.30	91.00	8.00	9.00	164.00	146.00	23.90	18.80	1.317.00	146.00	7.42	101.00	22.20	2.05	166.00	34.60	4.79
IPE O 180	182.00	6.00	92.00	9.00	9.00	164.00	146.00	27.10	21.30	1.505.00	165.00	7.45	117.00	25.50	2.08	189.00	39.90	6.76
IPE R 180	183.00	6.40	89.00	9.50	9.00	164.00	146.00	28.10	22.10	1.554.00	170.00	7.44	112.00	25.20	2.00	195.00	39.70	7.78
IPE A 200	197.00	4.50	100.00	7.00	12.00	183.00	159.00	23.50	18.40	1.591.00	162.00	8.23	117.00	23.40	2.23	182.00	36.50	4.11
IPE 200	200.00	5.60	100.00	8.50	12.00	183.00	159.00	28.50	22.40	1.943.00	194.00	8.26	142.00	28.50	2.24	221.00	44.60	6.98
IPE O 200	202.00	6.20	102.00	9.50	12.00	183.00	159.00	32.00	25.10	2.211.00	219.00	8.32	169.00	33.10	2.30	249.00	51.90	9.45
IPE R 200	204.00	6.60	98.00	10.50	12.00	183.00	159.00	33.90	26.60	2.363.00	232.00	8.35	166.00	33.80	2.21	265.00	53.20	11.70
IPE A 220	217.00	5.00	110.00	7.70	12.00	201.60	177.60	28.30	22.20	2.317.00	214.00	9.05	171.00	31.20	2.46	240.00	48.50	5.69
IPE 220	220.00	5.90	110.00	9.20	12.00	201.60	177.60	33.40	26.20	2.772.00	252.00	9.11	205.00	37.30	2.48	285.00	58.10	9.07
IPE O 220	222.00	6.60	112.00	10.20	12.00	201.60	177.60	37.40	29.40	3.134.00	282.00	9.16	240.00	42.80	2.53	321.00	66.90	12.30
IPE R 220	225.00	6.70	108.00	11.80	12.00	201.40	177.40	40.20	31.60	3.474.00	309.00	9.29	249.00	46.10	2.49	352.00	71.80	16.20
IPE A 240	237.00	5.20	120.00	8.30	15.00	220.40	190.40	33.30	26.20	3.290.00	278.00	9.94	240.00	40.00	2.68	312.00	62.40	8.35
IPE 240	240.00	6.20	120.00	9.80	15.00	220.40	190.40	39.10	30.70	3.892.00	324.00	9.97	284.00	47.30	2.69	367.00	73.90	12.90
IPE O 240	242.00	7.00	122.00	10.80	15.00	220.40	190.40	43.70	34.30	4.369.00	361.00	10.00	329.00	53.90	2.74	410.00	84.40	17.20
IPE R 240	245.00	7.50	118.00	12.30	15.00	220.40	190.40	47.50	37.30	4.823.00	394.00	10.10	339.00	57.40	2.67	449.00	90.10	22.70
IPE A 270	267.00	5.50	135.00	8.70	15.00	249.60	219.60	39.10	30.70	4.917.00	368.00	11.20	358.00	53.00	3.02	412.00	82.30	10.30
IPE 270	270.00	6.60	135.00	10.20	15.00	249.60	219.60	45.90	36.10	5.790.00	429.00	11.20	420.00	62.20	3.02	484.00	97.00	15.90
IPE O 270	274.00	7.50	136.00	12.20	15.00	249.60	219.60	53.80	42.30	6.947.00	507.00	11.40	513.00	75.50	3.09	575.00	118.00	24.90
IPE R 270	276.00	7.70	133.00	13.10	15.00	249.80	219.80	56.00	44.00	7.312.00	530.00	11.40	516.00	77.60	3.03	602.00	121.00	28.80
IPE A 300	297.00	6.10	150.00	9.20	15.00	278.60	248.60	46.50	36.50	7.173.00	483.00	12.40	519.00	69.20	3.34	542.00	107.00	13.40
IPE 300	300.00	7.10	150.00	10.70	15.00	278.60	248.60	53.80	42.20	8.356.00	557.00	12.50	604.00	80.50	3.35	628.00	125.00	20.10
IPE O 300	304.00	8.00	152.00	12.70	15.00	278.60	248.60	62.80	49.30	9.994.00	658.00	12.60	746.00	98.10	3.45	744.00	153.00	31.10
IPE R 300	306.00	8.50	147.00	13.70	15.00	278.60	248.60	65.90	51.70	10.500.00	686.00	12.60	728.00	99.00	3.32	780.00	155.00	37.10

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.6 PERFIL I LIVIANO DE ALAS PARALELAS - IPE



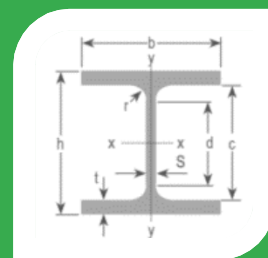
PERFIL I LIVIANO DE ALAS PARALELAS - IPE																		
PERFILES IPE	Dimensiones y propiedades para el diseño																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
DESIGNACIÓN	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry	Zx	Zy	Jt
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
IPE A 330	327.00	6.50	160.00	10.00	18.00	307.00	271.00	54.70	43.00	10.230.00	626.00	13.70	685.00	85.60	3.54	702.00	133.00	19.60
IPE 330	330.00	7.50	160.00	11.50	18.00	307.00	271.00	62.60	49.10	11.770.00	713.00	13.70	788.00	98.50	3.55	804.00	154.00	28.10
IPE O 330	334.00	8.50	162.00	13.50	18.00	307.00	271.00	72.60	57.00	13.910.00	833.00	13.80	960.00	119.00	3.64	943.00	185.00	42.20
IPE R 330	336.00	9.20	158.00	14.50	18.00	307.00	271.00	76.80	60.30	14.690.00	874.00	13.80	958.00	121.00	3.53	995.00	190.00	50.80
IPE A 360	357.60	6.60	170.00	11.50	18.00	334.60	298.60	64.00	50.20	14.520.00	812.00	15.10	944.00	111.00	3.84	907.00	172.00	26.50
IPE 360	360.00	8.00	170.00	12.70	18.00	334.60	298.60	72.70	57.10	16.270.00	904.00	15.00	1.043.00	123.00	3.79	1.019.00	191.00	37.30
IPE O 360	364.00	9.20	172.00	14.70	18.00	334.60	298.60	84.10	66.00	19.050.00	1.047.00	15.00	1.251.00	145.00	3.86	1.186.00	227.00	55.80
IPE R 360	366.00	9.90	168.00	16.00	18.00	334.00	298.00	89.60	70.30	20.290.00	1.109.00	15.00	1.270.00	151.00	3.76	1.262.00	236.00	68.80
IPE A 400	397.00	7.00	180.00	12.00	21.00	373.00	331.00	73.10	57.40	20.290.00	1.022.00	16.70	1.171.00	130.00	4.00	1.144.00	202.00	34.80
IPE 400	400.00	8.60	180.00	13.50	21.00	373.00	331.00	84.50	66.30	23.130.00	1.156.00	16.50	1.318.00	146.00	3.95	1.307.00	229.00	51.10
IPE O 400	404.00	9.70	182.00	15.50	21.00	373.00	331.00	96.40	75.70	26.750.00	1.324.00	16.70	1.564.00	172.00	4.03	1.502.00	269.00	73.10
IPE R 400	407.00	10.60	178.00	17.00	21.00	373.00	331.00	104.00	81.50	28.860.00	1.418.00	16.70	1.606.00	180.00	3.93	1.618.00	284.00	92.40
IPE V 400	408.00	10.60	182.00	17.50	21.00	373.00	331.00	107.00	84.00	30.140.00	1.477.00	16.80	1.766.00	194.00	4.06	1.681.00	304.00	99.00
IPE A 450	447.00	7.60	190.00	13.10	21.00	420.80	378.80	85.50	67.20	29.760.00	1.331.00	18.70	1.502.00	158.00	4.19	1.494.00	246.00	45.70
IPE 450	450.00	9.40	190.00	14.60	21.00	420.80	378.80	98.80	77.60	33.740.00	1.500.00	18.50	1.676.00	176.00	4.12	1.702.00	276.00	66.90
IPE O 450	456.00	11.00	192.00	17.60	21.00	420.80	378.80	118.00	92.40	40.920.00	1.795.00	18.60	2.085.00	217.00	4.21	2.046.00	341.00	109.00
IPE R 450	458.00	11.30	188.00	18.60	21.00	420.80	378.80	121.00	95.20	42.400.00	1.851.00	18.70	2.070.00	220.00	4.13	2.115.00	346.00	122.00
IPE V 450	460.00	12.40	194.00	19.60	21.00	420.80	378.80	132.00	104.00	46.200.00	2.009.00	18.70	2.397.00	247.00	4.26	2.301.00	389.00	150.00
IPE A 500	497.00	8.40	200.00	14.50	21.00	468.00	426.00	101.00	79.40	42.930.00	1.728.00	20.60	1.939.00	194.00	4.38	1.946.00	302.00	62.80
IPE 500	500.00	10.20	200.00	16.00	21.00	468.00	426.00	116.00	90.70	48.200.00	1.928.00	20.40	2.142.00	214.00	4.31	2.194.00	336.00	89.30
IPE O 500	506.00	12.00	202.00	19.00	21.00	468.00	426.00	137.00	107.00	57.780.00	2.284.00	20.60	2.622.00	260.00	4.38	2.613.00	409.00	143.00
IPE R 500	508.00	12.60	198.00	20.00	21.00	468.00	426.00	142.00	111.00	59.930.00	2.360.00	20.50	2.600.00	263.00	4.28	2.709.00	415.00	163.00
IPE V 500	514.00	14.20	204.00	23.00	21.00	468.00	426.00	164.00	129.00	70.720.00	2.752.00	20.80	3.271.00	321.00	4.47	3.168.00	507.00	243.00
IPE A 550	547.00	9.00	210.00	15.70	24.00	515.60	467.60	117.00	92.10	59.980.00	2.193.00	22.60	2.432.00	232.00	4.55	2.475.00	362.00	86.50
IPE 550	550.00	11.10	210.00	17.20	24.00	515.60	467.60	134.00	106.00	67.120.00	2.441.00	22.30	2.668.00	254.00	4.45	2.787.00	401.00	123.00
IPE O 550	556.00	12.70	212.00	20.20	24.00	515.60	467.60	156.00	123.00	79.160.00	2.847.00	22.50	3.224.00	304.00	4.55	3.263.00	481.00	188.00
IPE R 550	560.00	14.00	210.00	22.20	24.00	515.60	467.60	170.00	134.00	86.600.00	3.093.00	22.50	3.447.00	328.00	4.50	3.562.00	521.00	243.00
IPE V 550	566.00	17.10	216.00	25.20	24.00	515.60	467.60	202.00	159.00	102.300.00	3.616.00	22.50	4.265.00	395.00	4.60	4.205.00	632.00	380.00
IPE A 600	597.00	9.80	220.00	17.50	24.00	562.00	514.00	137.00	108.00	82.920.00	2.778.00	24.60	3.116.00	283.00	4.77	3.141.00	442.00	119.00
IPE 600	600.00	12.00	220.00	19.00	24.00	562.00	514.00	156.00	122.00	92.080.00	3.069.00	24.30	3.387.00	308.00	4.66	3.512.00	486.00	165.00
IPE O 600	610.00	15.00	224.00	24.00	24.00	562.00	514.00	197.00	154.00	118.300.00	3.879.00	24.50	4.521.00	404.00	4.79	4.471.00	640.00	318.00
IPE R 600	608.00	14.00	218.00	23.00	24.00	562.00	514.00	184.00	144.00	110.300.00	3.628.00	24.50	3.993.00	366.00	4.66	4.175.00	580.00	271.00
IPE V 600	618.00	18.00	228.00	28.00	24.00	562.00	514.00	234.00	184.00	141.600.00	4.582.00	24.60	5.570.00	489.00	4.88	5.324.00	780.00	512.00
IPE 750 X 137	753.00	11.50	263.00	17.00	17.00	719.00	685.00	175.00	137.00	159.900.00	4.246.00	30.30	5.166.00	393.00	5.44	4.865.00	614.00	137.00
IPE 750 X 147	753.00	13.20	265.00	17.00	17.00	719.00	685.00	187.00	147.00	166.100.00	4.411.00	29.80	5.289.00	399.00	5.31	5.110.00	631.00	162.00
IPE 750 X 161	758.00	13.80	266.00	19.30	17.00	719.40	685.40	204.00	161.00	186.100.00	4.909.00	30.20	6.073.00	457.00	5.45	5.666.00	720.00	212.00
IPE 750 X 173	762.00	14.40	267.00	21.60	17.00	718.80	684.80	221.00	173.00	205.800.00	5.402.00	30.50	6.873.00	515.00	5.57	6.218.00	810.00	274.00
IPE 750 X 185	766.00	14.90	267.00	23.60	17.00	718.80	684.80	236.00	185.00	223.000.00	5.821.00	30.80	7.510.00	563.00	5.65	6.691.00	884.00	337.00
IPE 750 X 196	770.00	15.60	268.00	25.40	17.00	719.20	685.20	251.00	196.00	240.300.00	6.241.00	31.00	8.175.00	610.00	5.71	7.174.00	959.00	409.00
IPE 750 X 210	775.00	16.00	268.00	28.00	17.00	719.00	685.00	268.00	210.00	262.200.00	6.765.00	31.30	9.011.00	672.00	5.80	7.762.00	1.054.00	514.00
IPE 750 X 222	778.00	17.00	269.00	29.50	17.00	719.00	685.00	283.00	222.00	278.200.00	7.152.00	31.30	9.604.00	714.00	5.82	8.225.00	1.122.00	605.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.7 PERFIL H EUROPEO DE ALA ANCHA - HE



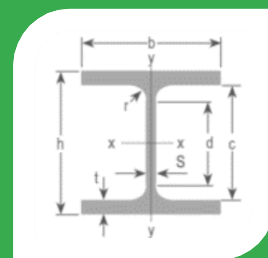
PERFIL H EUROPEO DE ALA ANCHA - HE																		
PERFILES HE	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sx	ry	Zx	Zy	
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
HEA A 100	91.0	4.2	100.0	5.5	12.0	80.0	56.0	15.6	12.2	237.0	52.0	3.89	92.10	18.40	2.43	58.40	28.40	2.51
HEA 100	96.0	5.0	100.0	8.0	12.0	80.0	56.0	21.2	16.7	349.0	72.8	4.06	134.00	26.80	2.51	83.00	41.10	5.24
DIL 100	100.0	5.0	100.0	10.0	12.0	80.0	56.0	25.2	19.8	445.0	89.1	4.20	167.00	33.40	2.57	103.00	51.10	8.40
HEB 100	100.0	6.0	100.0	10.0	12.0	80.0	56.0	26.0	20.4	450.0	89.9	4.16	167.00	33.50	2.53	104.00	51.40	9.25
HEM 100	120.0	12.0	106.0	20.0	12.0	80.0	56.0	53.2	41.8	1.143.0	190.0	4.63	399.00	75.30	2.74	236.00	116.00	68.20
HEA A 120	109.0	4.2	120.0	5.5	12.0	98.0	74.0	18.6	14.6	413.0	75.8	4.72	159.00	26.50	2.93	84.10	40.60	2.78
HEA 120	114.0	5.0	120.0	8.0	12.0	98.0	74.0	25.3	19.9	606.0	106.0	4.89	231.00	38.50	3.02	119.00	58.90	5.99
DIL 120	120.0	5.0	120.0	11.0	12.0	98.0	74.0	32.5	25.5	853.0	142.0	5.12	317.00	52.90	3.12	162.00	80.50	12.40
HEB 120	120.0	6.5	120.0	11.0	12.0	98.0	74.0	34.0	26.7	864.0	144.0	5.04	318.00	52.90	3.06	165.00	81.00	13.80
HEM 120	140.0	12.5	126.0	21.0	12.0	98.0	74.0	66.4	52.1	2.018.0	288.0	5.51	703.00	112.00	3.25	351.00	172.00	91.70
HEA A 140	128.0	4.3	140.0	6.0	12.0	116.0	92.0	23.0	18.1	719.0	112.0	5.59	275.00	39.30	3.45	124.00	59.90	3.54
HEA 140	133.0	5.5	140.0	8.5	12.0	116.0	92.0	31.4	24.7	1.033.0	155.0	5.73	389.00	55.60	3.52	173.00	84.80	8.13
DIL 140	140.0	5.0	140.0	12.0	12.0	116.0	92.0	40.6	31.9	1.483.0	212.0	6.04	549.00	78.50	3.68	239.00	119.00	17.80
HEB 140	140.0	7.0	140.0	12.0	12.0	116.0	92.0	43.0	33.7	1.509.0	216.0	5.93	550.00	78.50	3.58	245.00	120.00	20.10
HEM 140	160.0	13.0	146.0	22.0	12.0	116.0	92.0	80.6	63.2	3.291.0	411.0	6.39	1.144.00	157.00	3.77	494.00	241.00	120.00
HEA A 160	148.0	4.5	160.0	7.0	15.0	134.0	104.0	30.4	23.8	1.283.0	173.0	6.50	479.00	59.80	3.97	190.00	91.40	6.33
HEA 160	152.0	6.0	160.0	9.0	15.0	134.0	104.0	38.8	30.4	1.673.0	220.0	6.57	616.00	76.90	3.98	245.00	118.00	12.20
DIL 160	160.0	5.0	160.0	13.0	15.0	134.0	104.0	50.2	39.4	2.432.0	304.0	6.96	888.00	111.00	4.21	340.00	168.00	26.10
HEB 160	160.0	8.0	160.0	13.0	15.0	134.0	104.0	54.3	42.6	2.492.0	311.0	6.78	889.00	111.00	4.05	354.00	170.00	31.20
HEM 160	180.0	14.0	166.0	23.0	15.0	134.0	104.0	97.1	76.2	5.098.0	566.0	7.25	1.759.00	212.00	4.26	675.00	325.00	162.00
HEA A 180	167.0	5.0	180.0	7.5	15.0	152.0	122.0	36.5	28.7	1.967.0	236.0	7.34	730.00	81.10	4.47	258.00	124.00	8.33
HEA 180	171.0	6.0	180.0	9.5	15.0	152.0	122.0	45.3	35.5	2.510.0	294.0	7.45	925.00	103.00	4.52	325.00	156.00	14.80
DIL 180	180.0	5.5	180.0	14.0	15.0	152.0	122.0	60.7	47.6	3.743.0	416.0	7.85	1.362.00	151.00	4.74	464.00	229.00	36.10
HEB 180	180.0	8.5	180.0	14.0	15.0	152.0	122.0	65.3	51.2	3.831.0	426.0	7.66	1.363.00	151.00	4.57	481.00	231.00	42.20
HEM 180	200.0	14.5	186.0	24.0	15.0	152.0	122.0	113.0	88.9	7.483.0	748.0	8.13	2.580.00	277.00	4.77	883.00	425.00	203.00
HEA A 200	186.0	5.5	200.0	8.0	18.0	170.0	134.0	44.1	34.6	2.944.0	317.0	8.17	1.068.00	107.00	4.92	347.00	163.00	12.70
HEA 200	190.0	6.5	200.0	10.0	18.0	170.0	134.0	53.8	42.3	3.692.0	389.0	8.28	1.336.00	134.00	4.98	429.00	204.00	21.00
DIL 200	200.0	6.0	200.0	15.0	18.0	170.0	134.0	73.0	57.3	5.573.0	557.0	8.74	2.002.00	200.00	5.24	621.00	303.00	50.70
HEB 200	200.0	9.0	200.0	15.0	18.0	170.0	134.0	78.1	61.3	5.696.0	570.0	8.54	2.003.00	200.00	5.07	643.00	306.00	59.30
HEM 200	220.0	15.0	206.0	25.0	18.0	170.0	134.0	131.0	103.0	10.640.0	967.0	9.00	3.651.00	354.00	5.27	1.135.00	543.00	259.00
HEA A 220	205.0	6.0	220.0	8.5	18.0	188.0	152.0	51.5	40.4	4.170.0	407.0	9.00	1.510.00	137.00	5.42	445.00	209.00	15.90
HEA 220	210.0	7.0	220.0	11.0	18.0	188.0	152.0	64.3	50.5	5.410.0	515.0	9.17	1.955.00	178.00	5.51	568.00	271.00	28.50
DIL 220	220.0	6.5	220.0	16.0	18.0	188.0	152.0	85.4	67.0	7.925.0	720.0	9.63	2.842.00	258.00	5.77	801.00	391.00	66.80
HEB 220	220.0	9.5	220.0	16.0	18.0	188.0	152.0	91.0	71.5	8.091.0	736.0	9.43	2.843.00	258.00	5.59	827.00	394.00	76.60
HEM 220	240.0	15.5	226.0	26.0	18.0	188.0	152.0	149.0	117.0	14.600.0	1.217.0	9.89	5.012.00	444.00	5.79	1.419.00	679.00	315.00
HEA A 240	224.0	6.5	240.0	9.0	21.0	206.0	164.0	60.4	47.4	5.835.0	521.0	9.83	2.077.00	173.00	5.87	571.00	264.00	23.00
HEA 240	230.0	7.5	240.0	12.0	21.0	206.0	164.0	76.8	60.3	7.763.0	675.0	10.10	2.769.00	231.00	6.00	745.00	352.00	41.60
DIL 240	240.0	7.0	240.0	17.0	21.0	206.0	164.0	99.8	78.3	11.040.0	920.0	10.50	3.921.00	327.00	6.27	1.021.00	495.00	89.50
HEB 240	240.0	10.0	240.0	17.0	21.0	206.0	164.0	106.0	83.2	11.260.0	938.0	10.30	3.923.00	327.00	6.08	1.053.00	498.00	103.00
HEM 240	270.0	18.0	248.0	32.0	21.0	206.0	164.0	200.0	157.0	24.290.0	1.799.0	11.00	8.153.00	657.00	6.39	2.117.00	1.006.00	628.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



4

4.7 PERFIL H EUROPEO DE ALA ANCHA - HE



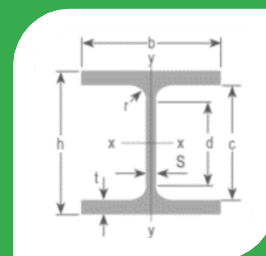
PERFIL H EUROPEO DE ALA ANCHA - HE																		
PERFILES HE	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sx	ry	Zx	Zy	Jt
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
HEA A 260	244.0	6.5	260.0	9.5	24.0	225.0	177.0	69.0	54.1	7.981.0	654.0	10.8	2.788.0	214.0	6.4	714.0	328.0	30.3
HEA 260	250.0	7.5	260.0	12.5	24.0	255.0	177.0	86.8	68.2	10.450.0	836.0	11.0	3.668.0	282.0	6.5	920.0	430.0	52.4
DIL 260	260.0	7.5	260.0	17.5	24.0	225.0	177.0	113.0	88.6	14.680.0	1.129.0	11.4	5.132.0	395.0	6.7	1.251.0	599.0	110.0
HEB 260	260.0	10.0	260.0	17.5	24.0	225.0	177.0	118.0	93.0	14.920.0	1.148.0	11.2	5.135.0	395.0	6.6	1.283.0	602.0	124.0
HEM 260	290.0	18.0	268.0	32.5	24.0	225.0	177.0	220.0	172.0	31.310.0	2.159.0	11.9	10.450.0	780.0	6.9	2.524.0	1.192.0	719.0
HEA A 280	264.0	7.0	280.0	10.0	24.0	244.0	196.0	78.0	61.2	10.560.0	800.0	11.6	3.664.0	262.0	6.9	873.0	399.0	36.2
HEA 280	270.0	8.0	280.0	13.0	24.0	244.0	196.0	97.3	76.4	13.670.0	1.013.0	11.9	4.763.0	340.0	7.0	1.112.0	518.0	62.1
DIL 280	280.0	8.0	280.0	18.0	24.0	244.0	196.0	125.0	98.3	18.970.0	1.355.0	12.3	6.592.0	471.0	7.3	1.497.0	714.0	128.0
HEB 280	280.0	10.5	280.0	18.0	24.0	244.0	196.0	131.0	103.0	19.270.0	1.376.0	12.1	6.595.0	471.0	7.1	1.534.0	718.0	144.0
HEM 280	310.0	18.5	288.0	33.0	24.0	244.0	196.0	240.0	189.0	39.550.0	2.551.0	12.8	13.160.0	914.0	7.4	2.966.0	1.397.0	807.0
HEA A 300	283.0	7.5	300.0	10.5	27.0	262.0	208.0	88.9	69.8	13.800.0	976.0	12.5	4.734.0	316.0	7.3	1.065.0	482.0	49.3
HEA 300	290.0	8.5	300.0	14.0	27.0	262.0	208.0	113.0	88.3	18.260.0	1.260.0	12.7	6.310.0	421.0	7.5	1.383.0	641.0	85.2
DIL 300	300.0	8.5	300.0	19.0	27.0	262.0	208.0	143.0	112.0	24.790.0	1.653.0	13.2	8.560.0	571.0	7.8	1.826.0	866.0	165.0
HEB 300	300.0	11.0	300.0	19.0	27.0	262.0	208.0	149.0	117.0	25.170.0	1.678.0	13.0	8.563.0	571.0	7.6	1.869.0	870.0	185.0
HEC 300	320.0	16.0	305.0	29.0	27.0	262.0	208.0	225.0	177.0	40.950.0	2.559.0	13.5	13.740.0	901.0	7.8	2.927.0	1.374.0	598.0
HEM 300	340.0	21.0	310.0	39.0	27.0	262.0	208.0	303.0	238.0	59.200.0	3.482.0	14.0	19.400.0	1.252.0	8.0	4.078.0	1.913.0	1.408.0
HEA A 320	301.0	8.0	300.0	11.0	27.0	279.0	225.0	94.6	74.2	16.450.0	1.093.0	13.2	4.959.0	331.0	7.2	1.196.0	506.0	55.9
HEA 320	310.0	9.0	300.0	15.5	27.0	279.0	225.0	124.0	97.6	22.930.0	1.479.0	13.6	6.985.0	466.0	7.5	1.628.0	710.0	108.0
DIL 320	320.0	9.0	300.0	20.5	27.0	279.0	225.0	154.0	121.0	30.370.0	1.898.0	14.0	9.235.0	616.0	7.7	2.101.0	935.0	203.0
HEB 320	320.0	11.5	300.0	20.5	27.0	279.0	225.0	161.0	127.0	30.820.0	1.926.0	13.8	9.239.0	616.0	7.6	2.149.0	939.0	225.0
HEM 320	359.0	21.0	309.0	40.0	27.0	279.0	225.0	312.0	245.0	68.130.0	3.796.0	14.8	19.710.0	1.276.0	8.0	4.435.0	1.951.0	1.501.0
HEA A 340	320.0	8.5	300.0	11.5	27.0	297.0	243.0	101.0	78.9	19.550.0	1.222.0	13.9	5.185.0	346.0	7.2	1.341.0	529.0	63.1
HEA 340	330.0	9.5	300.0	16.5	27.0	297.0	243.0	133.0	105.0	27.690.0	1.678.0	14.4	7.436.0	496.0	7.5	1.850.0	756.0	127.0
DIL 340	340.0	9.5	300.0	21.5	27.0	297.0	243.0	163.0	128.0	36.110.0	2.124.0	14.9	9.686.0	646.0	7.7	2.353.0	981.0	234.0
HEB 340	340.0	12.0	300.0	21.5	27.0	297.0	243.0	171.0	134.0	36.660.0	2.156.0	14.6	9.690.0	646.0	7.5	2.408.0	986.0	257.0
HEM 340	377.0	21.0	309.0	40.0	27.0	297.0	243.0	316.0	248.0	76.340.0	4.052.0	15.6	19.710.0	1.276.0	7.9	4.718.0	1.953.0	1.506.0
HEA A 360	339.0	9.0	300.0	12.0	27.0	315.0	261.0	107.0	83.7	23.040.0	1.359.0	14.7	5.410.0	361.0	7.1	1.495.0	553.0	71.0
HEA 360	350.0	10.0	300.0	17.5	27.0	315.0	261.0	143.0	112.0	33.090.0	1.891.0	15.2	7.887.0	526.0	7.4	2.088.0	802.0	149.0
DIL 360	360.0	10.0	300.0	22.5	27.0	315.0	261.0	173.0	136.0	42.540.0	2.363.0	15.7	10.140.0	676.0	7.7	2.621.0	1.027.0	267.0
HEB 360	360.0	12.5	300.0	22.5	27.0	315.0	261.0	181.0	142.0	43.190.0	2.400.0	15.5	10.140.0	676.0	7.5	2.683.0	1.032.0	292.0
HEM 360	395.0	21.0	308.0	40.0	27.0	315.0	261.0	319.0	250.0	84.870.0	4.297.0	16.3	19.520.0	1.268.0	7.8	4.989.0	1.942.0	1.507.0
HEA A 400	378.0	9.5	300.0	13.0	27.0	352.0	298.0	118.0	92.4	31.250.0	1.654.0	16.3	5.861.0	391.0	7.1	1.824.0	600.0	84.7
HEA 400	390.0	11.0	300.0	19.0	27.0	352.0	298.0	159.0	125.0	45.070.0	2.311.0	16.8	8.564.0	571.0	7.3	2.562.0	873.0	189.0
DIL 400	400.0	11.0	300.0	24.0	27.0	352.0	298.0	189.0	148.0	56.770.0	2.839.0	17.3	10.810.0	721.0	7.6	3.154.0	1.098.0	325.0
HEB 400	400.0	13.5	300.0	24.0	27.0	352.0	298.0	198.0	155.0	57.680.0	2.884.0	17.1	10.820.0	721.0	7.4	3.232.0	1.104.0	355.0
HEM 400	432.0	21.0	307.0	40.0	27.0	352.0	298.0	326.0	256.0	104.100	4.820.0	17.9	19.340.0	1.260.0	7.7	5.571.0	1.934.0	1.515.0
HEA A 450	425.0	10.0	300.0	13.5	27.0	398.0	344.0	127.0	99.7	41.890.0	1.971.0	18.2	6.088.0	406.0	6.9	2.183.0	624.0	95.6
HEA 450	440.0	11.5	300.0	21.0	27.0	398.0	344.0	178.0	140.0	63.720.0	2.896.0	18.9	9.465.0	631.0	7.3	3.216.0	966.0	244.0
DIL 450	450.0	11.5	300.0	26.0	27.0	398.0	344.0	208.0	163.0	78.570.0	3.492.0	19.4	11.720.0	781.0	7.5	3.883.0	1.191.0	406.0
HEB 450	450.0	14.0	300.0	26.0	27.0	398.0	344.0	218.0	171.0	79.890.0	3.551.0	19.1	11.720.0	781.0	7.3	3.982.0	1.198.0	440.0
HEM 450	478.0	21.0	307.0	40.0	27.0	398.0	344.0	335.0	263.0	131.500	5.501.0	19.8	19.340.0	1.260.0	7.6	6.331.0	1.939.0	1.529.0

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



4

4.7 PERFIL H EUROPEO DE ALA ANCHA - HE



PERFIL H EUROPEO DE ALA ANCHA - HE																			
PERFILES HE	Dimensiones y propiedades para el diseño																		
	DIMENSIONES								AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS						EJE X-X			EJE Y-Y					
	h mm	s mm	b mm	t mm	r mm	c mm	d mm	lx cm4			Sx cm3	rx cm	ly cm4	Sx cm3	ry cm	Zx cm3			
DESIGNACIÓN	h mm	s mm	b mm	t mm	r mm	c mm	d mm	cm2	kg/mt	lx cm4	Sx cm3	rx cm	ly cm4	Sx cm3	ry cm	Zx cm3	Zy cm3	Jt cm4	
HEA A 500	472.0	10.5	300.0	14.0	27.0	444.0	390.0	137.0	107.0	54.640.0	2.315.0	20.0	6.314.0	421.0	6.8	2.576.0	649.0	108.0	
HEA 500	490.0	12.0	300.0	23.0	27.0	444.0	390.0	198.0	155.0	86.970.0	3.550.0	21.0	10.370.0	691.0	7.2	3.949.0	1.059.0	308.0	
DIL 500	500.0	12.0	300.0	28.0	27.0	444.0	390.0	228.0	179.0	105.400.0	4.214.0	21.5	12.620.0	841.0	7.5	4.691.0	1.284.0	499.0	
HEB 500	500.0	14.5	300.0	28.0	27.0	444.0	390.0	239.0	187.0	107.200.0	4.287.0	21.2	12.620.0	842.0	7.3	4.815.0	1.292.0	538.0	
HEM 500	524.0	21.0	306.0	40.0	27.0	444.0	390.0	344.0	270.0	161.900.0	6.180.0	21.7	19.150.0	1.252.0	7.5	7.094.0	1.932.0	1.539.0	
HEA A 550	522.0	11.5	300.0	15.0	27.0	492.0	438.0	153.0	120.0	72.870.0	2.792.0	21.8	6.767.0	451.0	6.7	3.128.0	699.0	134.0	
HEA 550	540.0	12.5	300.0	24.0	27.0	492.0	438.0	212.0	166.0	111.900.0	4.146.0	23.0	10.820.0	721.0	7.2	4.622.0	1.107.0	352.0	
DIL 550	550.0	12.5	300.0	29.0	27.0	492.0	438.0	242.0	190.0	134.200.0	4.880.0	23.6	13.070.0	871.0	7.4	5.439.0	1.332.0	556.0	
HEB 550	550.0	15.0	300.0	29.0	27.0	492.0	438.0	254.0	199.0	136.700.0	4.971.0	23.2	13.080.0	872.0	7.2	5.591.0	1.341.0	600.0	
HEM 550	572.0	21.0	306.0	40.0	27.0	492.0	438.0	354.0	278.0	198.000.0	6.923.0	23.6	19.160.0	1.252.0	7.4	7.933.0	1.397.0	1.554.0	
HEA A 600	571.0	12.0	300.0	15.5	27.0	540.0	486.0	164.0	129.0	91.870.0	3.218.0	23.7	6.993.0	466.0	6.5	3.623.0	724.0	150.0	
HEA 600	590.0	13.0	300.0	25.0	27.0	540.0	486.0	226.0	178.0	141.200.0	4.787.0	25.0	11.270.0	751.0	7.1	5.350.0	1.156.0	398.0	
DIL 600	600.0	13.0	300.0	30.0	27.0	540.0	486.0	256.0	201.0	167.800.0	5.592.0	25.6	13.520.0	901.0	7.3	6.243.0	1.381.0	618.0	
HEB 600	600.0	15.5	300.0	30.0	27.0	540.0	486.0	270.0	212.0	171.000.0	5.701.0	25.2	13.530.0	902.0	7.1	6.425.0	1.391.0	667.0	
HEM 600	620.0	21.0	305.0	40.0	27.0	540.0	486.0	364.0	285.0	237.400.0	7.660.0	25.6	18.980.0	1.244.0	7.2	8.772.0	1.930.0	1.564.0	
HEA A 650	620.0	12.5	300.0	16.0	27.0	588.0	534.0	176.0	138.0	113.900.0	3.676.0	25.5	7.221.0	481.0	6.4	4.160.0	751.0	168.0	
HEA 650	640.0	13.5	300.0	26.0	27.0	588.0	534.0	242.0	190.0	175.200.0	5.474.0	26.9	11.720.0	782.0	7.0	6.136.0	1.205.0	448.0	
HEB 650	650.0	16.0	300.0	31.0	27.0	588.0	534.0	286.0	225.0	210.600.0	6.480.0	27.1	13.980.0	932.0	7.0	7.320.0	1.441.0	739.0	
HEM 650	668.0	21.0	305.0	40.0	27.0	588.0	534.0	374.0	293.0	281.700.0	8.433.0	27.5	18.980.0	1.245.0	7.1	9.657.0	1.936.0	1.579.0	
HEA A 700	670.0	13.0	300.0	17.0	27.0	636.0	582.0	191.0	150.0	142.700.0	4.260.0	27.3	7.673.0	512.0	6.3	4.840.0	800.0	195.0	
HEA 700	690.0	14.5	300.0	27.0	27.0	636.0	582.0	260.0	204.0	215.300.0	6.241.0	28.8	12.180.0	812.0	6.8	7.032.0	1.257.0	514.0	
HEB 700	700.0	17.0	300.0	32.0	27.0	636.0	582.0	306.0	241.0	256.900.0	7.340.0	29.0	14.440.0	963.0	6.9	8.327.0	1.495.0	831.0	
HEM 700	716.0	21.0	304.0	40.0	27.0	636.0	582.0	383.0	301.0	329.300.0	9.198.0	29.3	18.800.0	1.237.0	7.0	10.540.0	1.929.0	1.589.0	
HEA A 800	770.0	14.0	300.0	18.0	30.0	734.0	674.0	218.0	172.0	208.900.0	5.426.0	30.9	8.134.0	542.0	6.1	6.225.0	857.0	257.0	
HEA 800	790.0	15.0	300.0	28.0	30.0	734.0	674.0	286.0	224.0	303.400.0	7.682.0	32.6	12.640.0	843.0	6.7	8.699.0	1.312.0	597.0	
HEB 800	800.0	17.5	300.0	33.0	30.0	734.0	674.0	334.0	262.0	359.100.0	8.977.0	32.8	14.900.0	994.0	6.7	10.230.0	1.553.0	946.0	
HEM 800	814.0	21.0	303.0	40.0	30.0	734.0	674.0	404.0	317.0	442.600.0	10.870.0	33.1	18.630.0	1.230.0	6.8	12.490.0	1.930.0	1.646.0	
HEA A 900	870.0	15.0	300.0	20.0	30.0	830.0	770.0	252.0	198.0	301.100.0	6.923.0	34.6	9.041.0	603.0	6.0	7.999.0	958.0	335.0	
HEA 900	890.0	18.0	300.0	30.0	30.0	830.0	770.0	321.0	252.0	422.100.0	9.485.0	36.3	13.550.0	903.0	6.5	10.810.0	1.414.0	737.0	
HEB 900	900.0	18.5	300.0	35.0	30.0	830.0	770.0	371.0	291.0	494.100.0	10.980.0	36.5	15.820.0	1.054.0	6.5	12.580.0	1.658.0	1.137.0	
HEM 900	910.0	21.0	302.0	40.0	30.0	830.0	770.0	424.0	333.0	570.400.0	12.540.0	36.7	18.450.0	1.222.0	6.6	14.440.0	1.929.0	1.671.0	
HEA A 000	970.0	16.0	300.0	21.0	30.0	928.0	868.0	282.0	222.0	406.500.0	8.380.0	38.0	9.501.0	633.0	5.8	9.777.0	1.016.0	403.0	
HEA 1000	990.0	16.5	300.0	31.0	30.0	928.0	868.0	347.0	272.0	553.800.0	11.190.0	40.0	14.000.0	934.0	6.4	12.820.0	1.470.0	822.0	
HEB 1000	1.000.0	19.0	300.0	36.0	30.0	928.0	838.0	400.0	314.0	644.700.0	12.890.0	40.1	16.280.0	1.085.0	6.4	14.860.0	1.716.0	1.254.0	
HEM 1000	1.008.0	21.0	302.0	40.0	30.0	928.0	868.0	444.0	349.0	722.300.0	14.330.0	40.3	18.460.0	1.222.0	6.5	16.570.0	1.940.0	1.701.0	
HEA 1100	1.090.0	18.0	300.0	31.0	20.0	1.028.0	988.0	374.0	294.0	693.500.0	12.720.0	43.0	14.010.0	934.0	6.1	14.780.0	1.483.0	839.0	
HEB 1100	1.100.0	20.0	300.0	36.0	20.0	1.028.0	988.0	425.0	334.0	801.500.0	14.570.0	43.4	16.280.0	1.085.0	6.2	16.950.0	1.728.0	1.253.0	
HEM 1100	1.108.0	22.0	302.0	40.0	20.0	1.028.0	988.0	471.0	370.0	897.300.0	16.200.0	43.6	18.460.0	1.223.0	6.3	18.890.0	1.954.0	1.703.0	
HE 1100	1.118.0	26.0	305.0	45.0	20.0	1.028.0	988.0	545.0	428.0	1.034.900.0	18.510.0	43.6	21.440.0	1.406.0	6.3	21.770.0	2.273.0	2.527.0	

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.8 PERFILES TIPO AMERICANO - CALIDADES DE ACEROS Y TOLERANCIAS

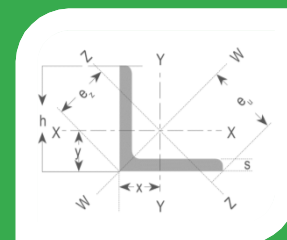
CALIDADES DE ACERO UTILIZADO PARA FABRICACION DE PERFILES TIPO AMERICANO (WF, C, I y L)																		
CALIDADES MAS COMUNES	COMPOSICION QUIMICA													PROPIEDADES MECÁNICAS				
	L	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Nb	V	CE	LIMITE ELÁSTICO		RESISTENCIA A LA TRACCIÓN		%ALARGA
ASTM		%	%	%	%	%	%	%	%	%	%	%	%					
A - 36	MIN		0,800			0,150								23Kg		41Kg/ mm2	400MPa	20
	MAX	0,260	1,200	0,050	0,040	0,400								25Kg/ mm3	250MPa	56Kg/ mm2	550MPa	21
A-572-GR 50	MIN													-	-			18
	MAX	0,230	1,350	0,050	0,040	0,400								35Kg/ mm2	345MPa	46Kg/ mm2	450MPa	21
A-572-GR 60	MIN													-	-			16
	MAX	0,260	1,350	0,050	0,040	0,400								42Kg/ mm2	415MPa	53Kg/ mm2	520MPa	18
A-588-GR B	MIN		0,750			0,150	0,200		0,400			0,010						18
	MAX	0,200	1,350	0,050	0,040	0,500	0,400		0,700			0,100		35Kg/ mm2	345MPa	49Kg/ mm2	485MPa	21
A-913-GR 50	MIN																	18
	MAX	0,120	1,600	0,030	0,040	0,400	0,450	0,250	0,250	0,070	0,050	0,060	0,380	35Kg/ mm2	345MPa	46Kg/ mm2	450MPa	21
A-992-GR A	MIN		0,500											35Kg/ mm2	345MPa			18
	MAX	0,230	1,500	0,040	0,035	0,400	0,600	0,450	0,350	0,150	0,050	0,110	0,450	46Kg/ mm2	450MPa	46Kg/ mm2	450MPa	21

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.9 ÁNGULO TIPO AMERICANO DE LADOS IGUALES



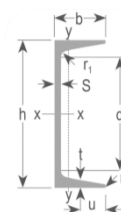
ÁNGULO TIPO AMERICANO DE LADOS IGUALES																
PERFILES EN L	Dimensiones y propiedades para el diseño															
	DIMENSIONES			DISTANCIAS DE LOS EJES			AREA	PESO	PROPIEDADES ELASTICAS							
	ALTURA=ALA		RADIOS						EJE X-X = Y-Y			EJE W-W		EJE Z-Z		
	h	s	r1	x=y	w	z			lx	Sx	rx	ln	rn	lz	Sz	rz
DESIGNACIÓN	mm	mm	mm	cm	cm	cm	cm2	kg/mt	cm4	cm3	cm	cm4	cm	cm4	cm3	cm
L 1/8" X 3/4"	19.05	3.17	3.20	0.58	1.34	0.82	1.11	0.88	0.37	0.28	0.58	0.58	0.73	0.16	0.19	0.38
L 1/8" X 1"	25.40	3.17	3.20	0.76	1.79	1.07	1.52	1.19	0.92	0.51	0.79	1.24	0.93	0.41	0.38	0.48
L 1/8" X 1 1/4"	31.75	3.17	4.70	0.89	2.24	1.25	1.93	1.50	1.83	0.80	0.97	2.91	1.19	0.83	0.66	0.60
L 1/8" X 1 1/2"	38.10	3.17	4.70	1.07	2.69	1.51	2.34	1.83	3.25	1.18	1.17	5.41	1.47	1.24	0.82	0.73
L 1/8" X 2"	50.80	3.17	6.30	1.40	3.58	1.97	3.10	2.46	7.91	2.13	1.60	12.49	1.97	3.32	1.68	0.99
L 3/16" X 1"	25.40	4.76	3.20	0.81	1.79	1.14	2.21	1.73	1.25	0.72	0.76	2.08	0.93	0.41	0.36	0.48
L 3/16" X 1 1/4"	31.75	4.76	4.70	0.97	2.24	1.37	2.79	2.20	2.54	1.16	0.97	3.74	1.19	0.83	0.61	0.60
L 3/16" X 1 1/2"	38.10	4.76	4.70	1.12	2.69	1.58	3.43	2.68	4.58	1.64	1.17	7.07	1.44	1.66	1.05	0.73
L 3/16" X 2"	50.80	4.76	6.30	1.45	3.58	2.00	4.61	3.63	11.45	3.11	1.57	17.48	1.95	4.57	2.28	0.99
L 3/16" X 2 1/2"	63.50	4.76	6.30	1.75	4.49	2.47	5.81	4.61	22.89	4.92	1.98	36.52	2.46	9.15	3.70	1.24
L 3/16" X 3"	76.20	4.76	7.90	2.08	5.38	2.94	7.03	5.52	40.01	7.22	2.39	64.38	3.03	16.12	5.48	1.51
L 1/4" X 1"	25.4	6.35	3.20	0.86	1.79	1.21	2.80	2.22	1.54	0.92	0.74	2.49	0.91	0.83	0.69	0.48
L 1/4" X 1 1/4"	31.75	6.35	4.70	1.02	2.24	1.44	3.72	2.86	3.21	1.49	0.94	4.99	1.16	1.24	0.86	0.60
L 1/4" X 1 1/2"	38.10	6.35	4.70	1.19	2.69	1.68	4.40	3.48	5.83	2.20	1.14	8.74	1.42	2.49	1.48	0.73
L 1/4" X 2"	50.80	6.35	6.30	1.50	3.58	2.10	6.06	4.75	14.57	4.10	1.55	22.47	1.93	5.82	2.77	0.99
L 1/4" X 2 1/2"	63.50	6.35	6.30	1.83	4.49	2.54	7.68	6.10	29.14	6.39	1.96	45.36	2.43	11.65	4.58	1.24
L 1/4" X 3"	76.20	6.35	7.90	2.13	5.38	2.97	9.29	7.29	51.60	9.50	2.36	78.66	2.94	20.39	6.86	1.49
L 1/4" X 4"	101.60	6.35	9.50	2.77	7.18	3.91	12.52	9.82	124.90	17.20	3.18	191.39	3.96	48.10	12.30	2.00
L 5/16" X 2"	50.80	7.94	6.30	1.55	3.58	2.18	7.42	5.83	17.46	4.92	1.52	26.63	1.90	7.07	3.24	0.99
L 5/16" X 2 1/2"	63.50	7.94	6.30	1.88	4.49	2.64	9.48	7.44	35.38	7.87	1.93	55.35	2.41	14.56	5.51	1.24
L 5/16" X 3"	76.20	7.94	7.90	2.21	5.38	3.04	11.48	9.08	62.90	11.60	2.34	96.98	2.92	24.97	8.21	1.47
L 5/16" X 4"	101.60	7.94	9.50	2.84	7.18	4.01	15.48	12.20	154.40	21.10	3.15	239.33	3.93	61.60	15.36	2.00
L 3/8" X 2"	50.80	9.53	6.30	1.63	3.58	2.30	8.77	6.99	19.98	5.74	1.50	30.80	1.87	8.32	3.61	0.99
L 3/8" X 2 1/2"	63.50	9.53	6.30	1.93	4.49	2.71	11.16	8.78	40.79	9.34	1.91	64.09	2.38	17.06	6.29	1.24
L 3/8" X 3"	76.20	9.53	7.90	2.26	5.38	3.14	13.61	10.72	73.30	13.60	2.31	112.79	2.89	29.55	9.41	1.47
L 3/8" X 4"	101.60	9.53	9.50	2.89	7.18	4.03	18.45	14.58	181.90	24.90	3.12	283.03	3.91	73.25	18.17	1.98
L 3/8" X 5"	127.00	9.53	12.70	3.53	8.96	4.97	23.29	18.30	363.80	39.70	3.96	579.60	4.99	148.00	29.80	2.52
L 3/8" X 6"	152.40	9.53	12.70	4.16	10.76	5.88	28.13	22.17	640.60	57.80	4.78	1018.60	6.02	262.60	44.70	3.05
L 1/2" X 3"	76.20	12.70	7.90	2.36	5.38	3.32	17.74	13.99	92.40	17.50	2.29	142.76	2.84	38.29	11.53	1.47
L 1/2" X 4"	101.60	12.70	9.50	2.99	7.18	4.21	24.19	19.05	231.40	32.30	3.10	361.28	3.86	94.48	22.44	1.98
L 1/2" X 5"	127.00	12.70	12.70	3.63	8.96	5.12	30.65	24.11	468.30	51.60	3.91	746.50	4.94	190.10	37.20	2.49
L 1/2" X 6"	152.40	12.70	12.70	4.27	10.76	6.03	37.10	29.17	828.70	75.50	4.72	1326.10	5.97	331.30	54.90	2.99
L 5/8" X 4"	101.60	15.88	9.50	3.12	7.18	4.39	29.74	23.36	277.20	39.30	3.05	433.71	3.81	115.71	26.35	1.98
L 5/8" X 6"	152.40	15.88	12.70	4.39	10.76	6.20	45.87	36.01	1005.60	92.80	4.67	1604.80	5.92	406.40	65.60	2.98
L 3/4" X 6"	152.40	19.05	12.70	4.52	10.76	6.38	54.45	42.71	1171.70	109.10	4.65	1859.20	5.85	484.20	75.90	2.98
L 1" X 6"	152.40	25.40	12.70	4.72	10.76	6.66	70.97	55.66	1476.00	140.00	4.57	2327.80	5.73	624.20	93.70	2.96

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.10 PERFIL U Ó C ESTÁNDAR AMERICANO



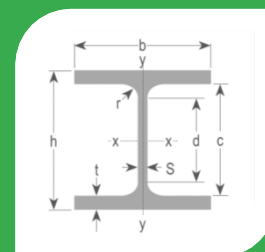
PERFIL C ESTANDAR AMERICANO - CE																
PERFILES CE	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO															
	DIMENSIONES							AREA	PESO	PROPIEDADES ELÁSTICAS						CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y			
	h	s	b	t	r1	r2	d			lx	Sx	rx	ly	Sx	rx	
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm4
C 3 X 4.1	76.20	4.30	35.80	6.90	6.90	2.50	44.00	7.68	6.10	66.40	18.00	2.97	8.32	3.44	1.04	1.12
C 3 X 5	76.20	6.50	38.00	6.90	6.90	2.50	45.60	9.40	7.44	74.90	19.70	2.84	10.40	3.93	1.04	1.79
C 3 X 6	76.20	6.50	38.00	6.90	6.90	2.50	45.60	11.30	8.93	87.40	22.90	2.74	12.90	4.42	1.07	3.04
C 4 X 5.4	101.60	4.60	40.10	7.50	7.10	2.80	68.80	10.10	8.04	158.00	31.10	3.96	13.30	4.75	1.14	1.66
C 4 X 7.25	101.60	8.10	43.70	7.50	7.10	2.80	68.80	13.70	10.80	187.00	36.90	3.73	18.30	5.73	1.17	3.41
C 5 X 6.7	127.00	4.80	44.50	8.10	7.40	2.80	91.80	12.60	10.00	308.00	49.20	4.95	20.00	6.23	1.27	2.29
C 5 X 9	127.00	8.20	47.90	8.10	7.40	2.80	91.80	17.00	13.40	366.00	57.70	4.65	26.60	7.40	1.62	4.54
C 6 X 8.2	152.40	5.10	48.80	8.70	7.60	3.00	115.00	15.40	12.20	541.00	70.50	5.94	29.10	8.19	7.37	3.12
C 6 X 10.5	152.40	8.00	51.70	8.70	7.60	3.00	115.00	19.80	15.60	628.00	82.40	5.64	36.20	9.33	1.35	5.45
C 6 X 13	152.40	11.10	54.80	8.70	7.60	3.00	115.00	24.60	19.30	720.00	95.00	5.41	45.80	10.70	1.35	10.00
C 6 X 15	152.40	14.30	58.00	8.70	7.60	3.00	115.00	29.40	23.07	813.00	106.70	5.26	53.30	12.10	1.35	
C 7 X 9.8	177.80	5.30	53.10	9.30	7.90	3.30	138.00	18.40	14.60	878.00	98.30	6.91	40.80	10.30	1.50	4.16
C 7 X 12.25	177.80	8.00	55.70	9.30	7.90	3.30	138.00	23.10	18.20	1.002.00	113.00	6.58	50.00	11.60	1.47	6.70
C 7 X 14.75	177.80	10.60	58.40	9.30	7.90	3.30	138.00	27.90	22.00	1.127.00	126.00	6.37	58.20	12.90	1.45	11.20
C 8 X 11.5	203.20	5.60	57.40	9.90	8.10	3.30	161.00	21.70	17.10	1.344.00	133.00	7.87	54.10	12.90	1.60	5.45
C 8 X 13.75	203.20	7.70	59.50	9.90	8.10	3.30	161.00	26.10	20.50	1.489.00	147.00	7.59	62.40	14.10	1.57	7.78
C 8 X 18.75	203.20	12.40	64.30	9.90	8.10	3.30	161.00	35.40	27.90	1.818.00	179.00	7.16	83.20	16.40	1.52	18.20
C 8 X 21.25	203.20	14.80	67.00	9.90	8.10	3.30	159.00	40.30	31.62	1.988.00	195.70	7.02	93.70	18.20	1.52	
C 9 X 13.4	228.60	5.80	61.70	10.50	8.40	3.60	184.00	25.10	19.90	1.969.00	172.00	8.86	74.90	15.90	1.70	7.03
C 9 X 15	228.60	7.20	63.10	10.50	8.40	3.60	184.00	28.30	22.30	2.109.00	185.00	8.64	79.00	16.40	1.70	8.70
C 9 X 20	228.60	11.40	67.30	10.50	8.40	3.60	184.00	37.80	29.80	2.521.00	221.00	8.18	99.80	19.70	1.65	17.90
C 10 X 15.3	254.00	6.10	66.00	11.10	8.60	3.60	207.00	28.80	22.80	2.785.00	220.00	9.83	95.70	19.70	1.83	8.78
C 10 X 20	254.00	9.60	69.50	11.10	8.60	3.60	207.00	38.00	29.80	3.267.00	257.00	9.27	117.00	21.60	1.75	15.40
C 10 X 25	254.00	13.40	73.30	11.10	8.60	3.60	207.00	47.30	37.20	3.775.00	297.00	8.93	142.00	24.60	1.73	28.70
C 10 X 30	254.00	17.10	77.00	11.10	8.60	3.60	207.00	56.80	44.60	4.287.00	338.00	8.69	167.00	27.50	1.71	50.80
C 12 X 20.7	304.80	7.10	74.70	12.70	9.70	4.30	252.00	38.90	30.80	5.332.00	351.00	11.70	162.00	27.90	2.06	15.40
C 12 X 25	304.80	9.80	77.40	12.70	9.70	4.30	252.00	47.20	37.20	5.970.00	392.00	11.30	187.00	31.10	2.00	22.50
C 12 X 30	304.80	12.90	80.50	12.70	9.70	4.30	252.00	56.70	44.60	6.706.00	441.00	10.90	216.00	34.40	1.95	36.00
C 15 X 33.9	381.00	10.20	86.40	16.50	12.70	6.11	314.00	63.90	50.40	13.010.00	683.00	14.30	341.00	52.40	2.31	42.00
C 15 X 40	381.00	13.20	89.40	16.50	12.70	6.11	314.00	75.50	59.50	14.410.00	757.00	13.80	387.00	55.70	2.26	60.80
C 15 X 50	381.00	18.20	94.40	16.50	12.70	6.11	314.00	94.40	74.40	16.700.00	878.00	13.30	466.00	62.20	2.21	111.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



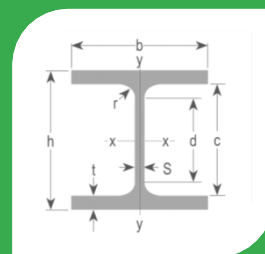
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF	Dimensiones y propiedades para el diseño																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELÁSTICAS						MODULO PLÁSTICO		CONS TORS
	ALA		DISTANCIAS			EJE X-X				EJE Y-Y								
	h	s	b	t	r	c	d			Ix	Sx	rx	Iy	Sy	ry	Zx	Zy	
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/ mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 4 X 13	102.00	6.50	100.00	9.40	6.00	83.20	71.20	24.50	19.35	441.00	86.40	4.24	157.00	31.40	2.53	99.50	48.00	6.90
WF 4 X 13.8	102.00	8.00	102.00	9.40	6.00	83.20	71.20	26.10	20.54	456.00	89.40	4.18	167.00	32.70	2.53	104.00	50.40	8.13
WF 4 X 16.3	107.00	7.90	100.00	12.00	6.00	83.00	71.00	30.90	24.26	587.00	110.00	4.36	200.00	40.10	2.55	129.00	61.50	13.70
WF 5 X 16	127.00	6.10	127.00	9.10	8.00	108.80	92.80	30.30	23.81	886.00	139.00	5.41	311.00	49.00	3.20	157.00	74.70	8.10
WF 5 X 19	131.00	6.90	128.00	10.90	8.00	109.00	93.20	36.00	28.28	1.099.00	168.00	5.53	381.00	59.60	3.26	191.00	90.90	13.40
WF 6 X 9	150.00	4.30	100.00	5.50	6.00	139.00	127.00	17.30	13.50	685.50	91.40	6.29	91.80	18.36	2.30	102.40	28.26	1.74
WF 6 X 12	153.00	5.80	102.00	7.10	6.00	138.40	126.40	22.90	18.00	915.90	122.10	6.33	125.90	25.37	2.36	138.60	39.29	3.86
WF 6 X 16	160.00	6.60	102.00	10.30	6.00	139.40	127.40	30.60	24.00	1.342.00	167.80	6.63	182.60	35.80	2.45	191.50	55.24	9.35
WF 6 X 15	152.00	5.80	152.00	6.60	6.00	138.80	126.80	28.40	22.32	1.205.00	159.00	6.51	387.00	50.90	3.69	176.00	77.50	4.31
WF 6 X 20	157.00	6.60	153.00	9.30	6.00	138.40	126.40	37.90	29.76	1.714.00	218.00	6.73	556.00	72.60	3.83	244.00	111.00	10.20
WF 6 X 25	162.00	8.10	154.00	11.60	6.00	138.80	126.80	47.30	37.20	2.219.00	274.00	6.85	707.00	91.80	3.87	310.00	140.00	19.50
WF 8 X 10	200.00	4.30	100.00	5.20	8.00	189.60	173.60	19.10	15.00	1.280.00	128.00	8.18	86.89	17.38	2.13	145.20	27.10	1.93
WF 8 X 13	203.00	5.80	102.00	6.50	8.00	190.00	174.00	24.80	19.30	1.662.00	163.70	8.17	115.40	22.63	2.15	188.10	35.69	3.99
WF 8 X 15	206.00	6.20	102.00	8.00	8.00	190.00	174.00	28.60	22.50	2.004.00	194.50	8.36	142.00	27.85	2.22	222.80	43.72	5.97
WF 8 X 14	203.00	5.00	133.00	6.40	8.00	190.20	174.20	27.08	21.00	1.980.00	195.10	8.55	251.30	37.78	3.05	217.70	58.03	3.74
WF 8 X 18	207.00	5.80	133.00	8.40	8.00	190.20	174.20	33.90	26.79	2.585.00	250.00	8.73	330.00	49.60	3.12	279.00	76.20	7.31
WF 8 X 21	210.00	6.40	134.00	10.20	8.00	189.60	173.60	40.00	31.25	3.124.00	299.00	8.86	410.00	61.10	3.20	336.00	93.80	12.10
WF 8 X 24	201.00	6.20	165.00	10.20	10.00	180.60	160.60	45.70	35.72	3.437.00	342.00	8.67	764.00	92.60	4.09	379.00	141.00	14.50
WF 8 X 28	205.00	7.20	166.00	11.80	10.00	181.40	161.40	53.10	41.67	4.086.00	399.00	8.77	900.00	108.00	4.12	445.00	165.00	22.30
WF 8 X 31	203.00	7.20	203.00	11.00	10.00	181.00	161.00	58.60	46.13	4.543.00	448.00	8.81	1.535.00	151.00	5.12	495.00	229.00	22.20
WF 8 X 35	206.00	7.90	204.00	12.60	10.00	180.80	160.80	66.50	52.09	5.270.00	512.00	8.90	1.784.00	175.00	5.18	569.00	266.00	32.50
WF 8 X 40	210.00	9.10	205.00	14.20	10.00	181.60	161.60	75.60	59.53	6.111.00	582.00	8.99	2.040.00	199.00	5.20	653.00	303.00	46.80
WF 8 X 48	216.00	10.20	206.00	17.40	10.00	181.20	161.20	91.00	71.43	7.660.00	709.00	9.17	2.537.00	246.00	5.28	803.00	375.00	82.10
WF 8 X 58	222.00	13.00	209.00	20.60	10.00	180.80	160.80	110.00	86.31	9.469.00	853.00	9.26	3.138.00	300.00	5.33	981.00	458.00	141.00
WF 8 X 67	229.00	14.50	210.00	23.70	10.00	181.60	161.60	127.00	99.71	11.330.00	989.00	9.45	3.664.00	349.00	5.38	1.149.00	533.00	211.00
WF 10 X 12	251.00	4.80	101.00	5.30	8.00	240.40	224.40	22.80	17.90	2.252.00	179.50	9.92	91.34	18.09	2.00	207.80	28.67	2.50
WF 10 X 15	254.00	5.80	102.00	6.90	8.00	240.20	224.20	28.50	22.30	2.901.00	228.40	10.06	122.60	24.03	2.07	264.60	38.20	4.68
WF 10 X 17	257.00	6.10	102.00	8.40	8.00	240.20	224.20	32.20	25.30	3.430.00	266.90	10.30	149.20	29.25	2.15	307.50	46.20	6.77
WF 10 X 19	260.00	6.40	102.00	10.00	8.00	240.00	224.00	36.30	28.40	3.998.00	307.50	10.51	177.50	34.81	2.21	352.90	54.71	9.80
WF 10 X 16	253.00	5.00	145.00	6.40	8.00	240.20	224.20	31.12	24.00	3.477.00	274.80	10.57	325.60	44.90	3.23	307.50	69.02	4.16
WF 10 X 22	258.00	6.10	146.00	9.10	8.00	239.80	223.80	41.70	32.74	4.895.00	379.00	10.80	473.00	64.70	3.36	425.00	99.50	10.00
WF 10 X 26	262.00	6.60	147.00	11.20	8.00	239.60	223.60	49.30	38.69	6.014.00	459.00	11.00	594.00	80.80	3.47	514.00	124.00	17.00
WF 10 X 30	266.00	7.60	148.00	13.00	8.00	240.00	224.00	57.30	44.65	7.115.00	535.00	11.10	703.00	95.10	3.50	603.00	146.00	26.40
WF 10 X 33	247.00	7.40	202.00	11.00	13.00	225.00	199.00	62.50	49.11	7.069.00	572.00	10.60	1.513.00	150.00	4.92	634.00	228.00	24.50
WF 10 X 39	252.00	8.00	203.00	13.50	13.00	225.00	199.00	74.30	58.04	8.736.00	693.00	10.80	1.884.00	186.00	5.04	771.00	283.00	41.10
WF 10 X 45	257.00	8.90	204.00	15.70	13.00	225.60	199.60	85.60	66.97	10.360.00	807.00	11.00	2.224.00	218.00	5.10	902.00	332.00	62.60
WF 10 X 49	253.00	8.60	254.00	14.20	13.00	224.60	198.60	92.90	72.92	11.280.00	892.00	11.00	3.880.00	306.00	6.46	986.00	463.00	57.80
WF 10 X 54	256.00	9.40	255.00	15.60	13.00	224.80	198.80	102.00	80.36	12.570.00	982.00	11.10	4.314.00	338.00	6.50	1.091.00	513.00	76.20
WF 10 X 60	260.00	10.70	256.00	17.30	13.00	225.40	199.40	114.00	89.29	14.260.00	1.097.00	11.20	4.841.00	378.00	6.51	1.227.00	575.00	105.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



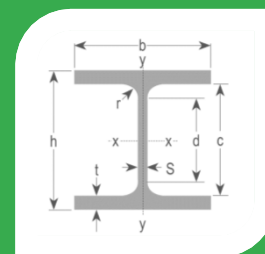
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF	Dimensiones y propiedades para el diseño																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELÁSTICAS						MÓDULO PLÁSTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry	Zx	Zy	Jt
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4		
WF 10 X 68	264.00	11.90	257.00	19.60	13.00	224.80	198.80	129.00	101.20	16.380.00	1.241.00	11.30	5.549.00	432.00	6.56	1.397.00	657.00	150.00
WF 10 X 77	269.00	13.50	259.00	22.10	13.00	224.80	198.80	146.00	114.59	18.940.00	1.409.00	11.40	6.405.00	495.00	6.62	1.600.00	753.00	216.00
WF 10 X 88	275.00	15.40	261.00	25.10	13.00	224.80	198.80	167.00	130.96	22.160.00	1.611.00	11.50	7.446.00	571.00	6.68	1.848.00	870.00	316.00
WF 10 X 100	282.00	17.30	263.00	28.40	13.00	225.20	199.20	190.00	148.82	25.940.00	1.840.00	11.70	8.622.00	656.00	6.74	2.129.00	1.001.00	457.00
WF 10 X 112	289.00	19.20	265.00	31.80	13.00	225.40	199.40	213.00	166.67	30.020.00	2.078.00	11.90	9.879.00	746.00	6.81	2.427.00	1.139.00	640.00
WF 12 X 14	303.00	5.10	101.00	5.70	8.00	291.60	275.60	26.80	21.00	3.708.00	244.80	11.75	98.31	19.47	1.91	287.10	31.19	3.17
WF 12 X 16	305.00	5.60	101.00	6.70	8.00	291.60	275.60	30.40	23.80	4.280.00	280.70	11.87	115.60	22.89	1.95	328.60	36.70	4.50
WF 12 X 19	309.00	6.00	102.00	8.90	8.00	291.20	275.20	35.90	28.30	5.431.00	351.50	12.27	158.10	30.99	2.09	406.90	49.15	7.72
WF 12 X 22	313.00	6.60	102.00	10.80	8.00	291.40	275.40	41.80	32.70	6.507.00	415.80	12.47	191.90	37.62	2.14	480.90	59.63	12.36
WF 12 X 21	306.00	5.00	164.00	7.40	8.00	291.20	275.20	39.38	31.00	6.554.00	428.40	12.90	544.40	66.39	3.72	476.30	101.60	6.25
WF 12 X 26	310.00	5.80	165.00	9.70	8.00	290.60	274.60	49.40	38.69	8.518.00	550.00	13.10	727.00	88.10	3.84	611.00	135.00	12.70
WF 12 X 30	313.00	6.60	166.00	11.20	8.00	290.60	274.60	56.90	44.65	9.934.00	635.00	13.20	855.00	103.00	3.88	708.00	158.00	19.30
WF 12 X 35	317.00	7.60	167.00	13.20	8.00	290.60	274.60	66.70	52.09	11.850.00	747.00	13.30	1.026.00	123.00	3.92	838.00	189.00	31.10
WF 12 X 40	303.00	7.50	203.00	13.10	15.00	276.80	246.80	75.88	60.00	12.860.00	848.90	13.02	1.829.00	180.20	4.91	940.70	275.20	39.15
WF 12 X 45	306.00	8.50	204.00	14.60	15.00	276.80	246.80	85.03	67.00	14.510.00	948.40	13.06	2.069.00	202.80	4.93	1.057.00	310.30	54.03
WF 12 X 50	310.00	9.40	205.00	16.30	15.00	277.40	247.40	94.84	74.00	16.450.00	1.061.00	13.17	2.344.00	228.70	4.97	1.188.00	350.20	74.05
WF 12 X 53	306.00	8.80	254.00	14.60	15.00	276.80	246.80	100.00	78.87	17.670.00	1.155.00	13.30	3.990.00	314.00	6.30	1.275.00	478.00	65.50
WF 12 X 58	310.00	9.10	254.00	16.30	15.00	277.40	247.40	110.00	86.00	19.850.00	1.280.00	13.43	4.455.00	350.80	6.36	1.417.00	533.10	86.96
WF 12 X 65	308.00	9.90	305.00	15.40	15.00	277.20	247.20	123.00	96.73	22.240.00	1.444.00	13.40	7.286.00	478.00	7.69	1.591.00	725.00	91.50
WF 12 X 72	311.00	10.90	306.00	17.00	15.00	277.00	247.00	136.00	107.15	24.790.00	1.594.00	13.50	8.123.00	531.00	7.72	1.765.00	806.00	122.00
WF 12 X 79	314.00	11.90	307.00	18.70	15.00	276.60	246.60	150.00	117.57	27.510.00	1.753.00	13.60	9.024.00	588.00	7.76	1.949.00	893.00	161.00
WF 12 X 87	318.00	13.10	308.00	20.60	15.00	276.80	246.80	165.00	129.47	30.770.00	1.935.00	13.70	10.040.00	652.00	7.80	2.164.00	991.00	214.00
WF 12 X 96	323.00	14.00	309.00	22.90	15.00	277.20	247.20	182.00	142.86	34.760.00	2.153.00	13.80	11.270.00	729.00	7.86	2.419.00	1.109.00	288.00
WF 12 X 106	327.00	15.50	310.00	25.10	15.00	276.80	246.80	200.00	157.75	38.630.00	2.363.00	13.90	12.470.00	805.00	7.89	2.672.00	1.225.00	380.00
WF 12 X 120	333.00	18.00	313.00	28.10	15.00	276.80	246.80	228.00	178.58	44.530.00	2.675.00	14.00	14.380.00	919.00	7.95	3.053.00	1.401.00	544.00
WF 12 X 136	341.00	20.10	315.00	31.70	15.00	277.60	247.60	257.00	202.39	51.870.00	3.042.00	14.20	16.540.00	1.050.00	8.01	3.502.00	1.603.00	777.00
WF 12 X 152	348.00	22.10	317.00	35.60	15.00	276.80	246.80	289.00	226.20	59.560.00	3.423.00	14.40	18.930.00	1.194.00	8.10	3.975.00	1.825.00	1.089.00
WF 12 x 170	356.00	24.40	319.00	39.60	15.00	276.80	246.80	322.00	252.99	66.230.00	3.833.00	14.60	21.460.00	1.346.00	8.16	4.490.00	2.059.00	1.495.00
WF 12 x 190	365.00	26.90	322.00	44.10	15.00	276.80	246.80	360.00	282.75	78.680.00	4.311.00	14.80	24.590.00	1.527.00	8.26	5.096.00	2.340.00	2.062.00
WF 12 x 210	374.00	30.00	325.00	48.30	15.00	277.40	247.40	399.00	312.52	89.560.00	4.789.00	15.00	27.700.00	1.705.00	8.33	5.716.00	2.617.00	2.742.00
WF 12 x 230	382.00	32.60	328.00	52.60	15.00	276.80	246.80	437.00	342.28	100.500.00	5.262.00	15.20	31.020.00	1.892.00	8.42	6.334.00	2.907.00	3.552.00
WF 12 x 252	391.00	35.40	330.00	57.20	15.00	276.60	246.60	477.00	375.02	112.800.00	5.769.00	15.40	34.370.00	2.083.00	8.49	7.004.00	3.205.00	4.570.00
WF 12 x 279	403.00	38.90	334.00	62.70	15.00	277.60	247.60	529.00	415.20	129.900.00	6.448.00	15.70	39.080.00	2.340.00	8.60	7.902.00	3.607.00	6.065.00
WF 12 x 305	415.00	41.30	336.00	68.70	15.00	277.60	247.60	578.00	453.89	147.900.00	7.130.00	16.00	43.610.00	2.596.00	8.66	8.816.00	4.001.00	7.868.00
WF 12 x 336	427.00	45.10	340.00	75.10	15.00	276.80	246.80	637.00	500.02	168.800.00	7.907.00	16.30	49.420.00	2.907.00	8.61	9.875.00	4.487.00	10.330.00
WF 14 X 22	349.00	5.80	127.00	8.50	10.00	332.00	312.00	41.90	32.90	8.258.00	473.20	14.07	291.00	45.82	2.64	541.50	71.80	8.65
WF 14 X 26	353.00	6.50	128.00	10.70	10.00	331.60	311.60	49.60	39.00	10.231.00	579.70	14.33	375.00	58.60	2.74	661.50	91.60	15.04
WF 14 X 30	352.00	6.90	171.00	9.80	10.00	332.40	312.40	57.30	44.65	12.160.00	691.00	14.60	818.00	95.70	3.78	778.00	148.00	16.20
WF 14 X 34	355.00	7.20	171.00	11.60	10.00	331.80	311.80	64.40	50.60	14.120.00	796.00	14.80	968.00	113.00	3.88	893.00	174.00	23.80
WF 14 X 38	358.00	7.90	172.00	13.10	10.00	331.80	311.80	72.10	56.55	16.040.00	896.00	14.90	1.113.00	129.00	3.93	1.009.00	199.00	33.50
WF 14 X 43	347.00	7.70	203.00	13.50	15.00	320.00	290.00	81.30	64.00	17.830.00	1.027.00	14.80	1.885.00	185.70	4.81	1.141.00	284.30	43.21
WF 14 X 48	350.00	8.60	204.00	15.10	15.00	319.80	289.80	91.00	72.00	20.100.00	1.149.00	14.86	2.140.00	209.80	4.85	1.282.00	321.60	59.71
WF 14 X 53	354.00	9.40	205.00	16.80	15.00	320.40	290.40	101.00	79.00	22.650.00	1.280.00	14.98	2.416.00	235.70	4.89	1.433.00	361.60	80.72
WF 14 X 61	353.00	9.50	254.00	16.40	15.00	320.20	290.20	116.00	90.76	26.690.00	1.512.00	15.20	4.483.00	353.00	6.23	1.676.00	538.00	91.20
WF 14 X 68	357.00	10.50	255.00	18.30	15.00	320.40	290.40	129.00	101.20	30.150.00	1.689.00	15.30	5.062.00	397.00	6.27	1.880.00	605.00	125.00
WF 14 X 74	360.00	11.40	256.00	19.90	15.00	320.20	290.20	140.00	110.12	33.090.00	1.838.00	15.40	5.570.00	435.00	6.30	2.055.00	664.00	160.00
WF 14 X 82	363.00	13.00	257.00	21.70	15.00	319.60	289.60	155.00	122.03	36.530.00	2.013.00	15.40	6.147.00	478.00	6.30	2.266.00	732.00	212.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



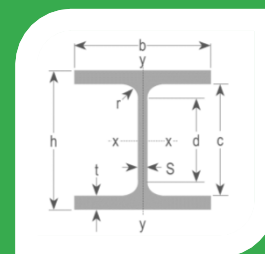
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF		Dimensiones y propiedades para el diseño																
		DIMENSIONES						AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
		ALTURA		ALA		DISTANCIAS				EJE X-X			EJE Y-Y					
DESIGNACIÓN	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry	Zx	Zy	Jt
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 14 X 90	356.00	11.20	369.00	18.00	15.00	320.00	290.00	171.00	133.93	41.510.00	2.332.00	15.60	15.080.00	817.00	9.40	2.562.00	1.237.00	169.00
WF 14 X 99	360.00	12.30	370.00	19.80	15.00	320.40	290.40	188.00	147.33	46.290.00	2.572.00	15.70	16.720.00	904.00	9.43	2.838.00	1.369.00	224.00
WF 14 X 109	364.00	13.30	371.00	21.80	15.00	320.40	290.40	206.00	162.21	51.540.00	2.832.00	15.80	18.560.00	1.001.00	9.49	3.139.00	1.516.00	296.00
WF 14 X 120	368.00	15.00	373.00	23.90	15.00	320.20	290.20	228.00	178.58	57.440.00	3.122.00	15.90	20.680.00	1.109.00	9.52	3.482.00	1.683.00	394.00
WF 14 X 132	372.00	16.40	374.00	26.20	15.00	319.60	289.60	250.00	196.44	63.630.00	3.421.00	15.90	22.860.00	1.222.00	9.56	3.837.00	1.856.00	517.00
WF 14 X 145	375.00	17.30	394.00	27.70	15.00	319.60	289.60	275.00	215.78	71.140.00	3.794.00	16.10	28.250.00	1.434.00	10.10	4.262.00	2.176.00	637.00
WF 14 X 159	380.00	18.90	395.00	30.20	15.00	319.60	289.60	301.00	236.62	78.780.00	4.146.00	16.20	31.040.00	1.572.00	10.20	4.686.00	2.387.00	625.00
WF 14 X 176	387.00	21.10	396.00	33.30	15.00	320.40	290.40	335.00	261.92	89.410.00	4.620.00	16.30	35.020.00	1.760.00	10.20	5.260.00	2.676.00	1.116.00
WF 14 X 193	393.00	22.60	399.00	36.60	15.00	319.80	289.80	366.00	287.22	99.710.00	5.074.00	16.50	38.780.00	1.944.00	10.30	5.813.00	2.957.00	1.464.00
WF 14 X 211	399.00	24.90	401.00	39.60	15.00	319.80	289.80	399.00	314.00	110.200.00	5.525.00	16.60	42.600.00	2.125.00	10.30	6.374.00	3.236.00	1.870.00
WF 14 X 233	407.00	27.20	404.00	43.70	15.00	319.80	289.80	442.00	346.74	124.900.00	6.140.00	16.80	48.090.00	2.380.00	10.40	7.139.00	3.629.00	2.510.00
WF 14 X 257	416.00	29.80	406.00	48.00	15.00	320.00	290.00	487.00	382.46	141.300.00	6.794.00	17.00	53.620.00	2.641.00	10.50	7.965.00	4.031.00	3.326.00
WF 14 X 283	425.00	32.80	409.00	52.60	15.00	319.80	289.80	537.00	421.15	159.600.00	7.510.00	17.20	60.080.00	2.938.00	10.60	8.880.00	4.489.00	4.396.00
WF 14 X 311	435.00	35.80	412.00	57.40	15.00	320.20	290.20	590.00	462.82	180.200.00	8.263.00	17.50	67.040.00	3.254.00	10.70	9.878.00	4.978.00	5.735.00
WF 14 X 342	446.00	39.10	416.00	62.70	15.00	320.60	290.60	649.00	508.95	204.500.00	9.172.00	17.80	75.400.00	3.625.00	10.80	11.030.00	5.552.00	7.513.00
WF 14 X 370	455.00	42.00	418.00	67.60	15.00	319.80	289.80	701.00	550.62	226.100.00	9.939.00	18.00	82.490.00	3.947.00	10.80	12.050.00	6.051.00	9.410.00
WF 14 X 398	465.00	45.00	421.00	72.30	15.00	320.40	290.40	755.00	592.29	250.200.00	10.760.00	18.20	90.170.00	4.284.00	10.90	13.140.00	6.574.00	11.560.00
WF 14 X 426	474.00	47.60	424.00	77.10	15.00	319.80	289.80	808.00	633.96	274.200.00	11.570.00	18.40	98.250.00	4.634.00	11.00	14.220.00	7.117.00	14.020.00
WF 14 X 455	483.00	51.20	428.00	81.50	15.00	320.00	290.00	863.00	677.12	299.500.00	12.400.00	18.60	106.900.00	4.994.00	11.10	15.350.00	7.680.00	16.790.00
WF 14 X 500	498.00	55.60	432.00	88.90	15.00	320.20	290.20	948.00	744.08	342.100.00	13.740.00	19.00	119.900.00	5.552.00	11.20	17.170.00	8.549.00	21.840.00
WF 14 X 550	514.00	60.50	437.00	97.00	15.00	320.00	290.00	1.043.00	818.49	392.200.00	15.260.00	19.40	135.500.00	6.203.00	11.40	19.260.00	9.561.00	28.510.00
WF 14 X 605	531.00	65.90	442.00	106.00	15.00	319.00	289.00	1.149.00	900.34	450.200.00	16.960.00	19.80	153.300.00	6.938.00	11.60	21.620.00	10.710.00	37.350.00
WF 14 X 665	550.00	71.90	448.00	115.00	15.00	320.00	290.00	1.262.00	989.63	518.900.00	18.870.00	20.30	173.400.00	7.739.00	11.70	24.280.00	11.960.00	48.210.00
WF 14 X 730	569.00	78.00	454.00	125.00	15.00	319.00	289.00	1.386.00	1.086.36	595.700.00	20.940.00	20.70	196.200.00	8.645.00	11.90	27.210.00	13.380.00	62.290.00
WF 16 X 26	399.00	6.40	140.00	8.80	10.00	381.40	361.40	49.50	38.80	12.620.00	632.60	15.93	403.50	57.65	2.85	727.80	90.55	11.17
WF 16 X 31	403.00	7.00	140.00	11.20	10.00	380.60	360.60	58.80	46.10	15.550.00	771.90	16.26	513.60	73.37	2.95	883.60	114.90	19.25
WF 16 X 36	403.00	7.50	177.00	10.90	10.00	381.20	361.20	68.00	53.57	18.600.00	923.00	16.50	1.009.00	114.00	3.65	1.045.00	177.00	22.80
WF 16 X 40	407.00	7.70	178.00	12.80	10.00	381.40	361.40	75.80	59.53	21.570.00	1.060.00	16.90	1.205.00	135.00	3.99	1.194.00	209.00	32.80
WF 16 X 45	410.00	8.80	179.00	14.40	10.00	381.20	361.20	86.00	66.97	24.550.00	1.197.00	16.90	1.379.00	154.00	4.01	1.356.00	239.00	47.10
WF 16 X 50	413.00	9.70	180.00	16.00	10.00	381.00	361.00	95.40	74.41	27.480.00	1.331.00	17.00	1.559.00	173.00	4.04	1.512.00	269.00	64.00
WF 16 X 57	417.00	10.90	181.00	18.20	10.00	380.60	360.60	108.00	84.63	31.530.00	1.512.00	17.10	1.803.00	199.00	4.08	1.725.00	310.00	93.10
WF 16 X 67	415.00	10.00	260.00	16.90	10.00	381.20	361.20	127.00	99.71	39.760.00	1.916.00	17.70	4.954.00	381.00	6.25	2.129.00	581.00	99.70
WF 16 X 77	420.00	11.60	261.00	19.30	10.00	381.40	361.40	146.00	114.59	46.140.00	2.197.00	17.80	5.725.00	439.00	6.27	2.456.00	671.00	149.00
WF 16 X 89	425.00	13.30	263.00	22.20	10.00	380.60	360.60	168.00	132.45	53.830.00	2.533.00	17.90	6.739.00	512.00	6.33	2.850.00	785.00	227.00
WF 16 X 100	431.00	14.90	265.00	25.00	10.00	381.00	361.00	190.00	148.82	61.840.00	2.870.00	18.00	7.765.00	586.00	6.39	3.247.00	900.00	324.00
WF 18 X 35	450.00	7.60	152.00	10.80	10.00	428.40	408.40	66.20	52.09	21.200.00	942.00	17.90	634.00	83.40	3.09	1.088.00	131.00	21.20
WF 18 X 40	455.00	8.00	153.00	13.30	10.00	428.40	408.40	75.80	59.53	25.480.00	1.120.00	18.30	796.00	104.00	3.24	1.284.00	163.00	33.60
WF 18 X 46	459.00	9.10	154.00	15.40	10.00	428.20	408.20	87.30	68.46	29.680.00	1.293.00	18.40	941.00	122.00	3.28	1.487.00	192.00	51.10
WF 18 X 41	450.00	8.10	189.00	10.80	10.00	428.40	408.40	76.40	61.00	25.380.00	1.128.00	18.23	1.217.50	128.80	3.99	1.286.00	200.50	26.02
WF 18 X 45	454.00	8.50	190.00	12.70	10.00	428.60	408.60	85.50	67.00	29.470.00	1.298.00	18.56	1.454.40	153.10	4.12	1.473.00	237.50	37.46
WF 18 X 50	457.00	9.00	190.00	14.50	10.00	428.00	408.00	94.50	74.41	33.250.00	1.455.00	18.80	1.661.00	175.00	4.19	1.649.00	271.00	51.90
WF 18 X 55	460.00	9.90	191.00	16.00	10.00	428.00	408.00	104.00	81.85	36.990.00	1.608.00	18.80	1.862.00	195.00	4.22	1.828.00	303.00	69.50
WF 18 X 60	463.00	10.50	192.00	17.70	10.00	427.60	407.60	114.00	89.29	40.940.00	1.768.00	19.00	2.093.00	218.00	4.29	2.011.00	339.00	91.10
WF 18 X 65	466.00	11.40	193.00	19.00	10.00	428.00	408.00	123.00	96.73	44.490.00	1.909.00	19.00	2.280.00	237.00	4.31	2.179.00	368.00	114.00
WF 18 X 71	469.00	12.60	194.00	20.60	10.00	427.80	407.80	135.00	105.66	48.810.00	2.081.00	19.00	2.515.00	259.00	4.32	2.387.00	405.00	147.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



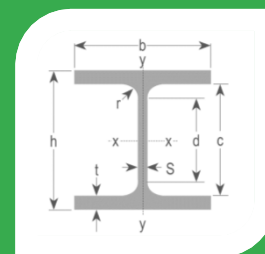
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF		Dimensiones y propiedades para el diseño																
		DIMENSIONES						AREA	PESO	PROPIEDADES ELASTICAS						MÓDULO PLÁSTICO		CONS TORS
		ALTURA		ALA		DISTANCIAS				EJE X-X			EJE Y-Y					
		h	s	b	t	r	c			d	lx	Sx	rx	ly	Sy	ry	Zx	
DESIGNACIÓN	mm	mm	mm	mm	mm	mm	mm	cm2	kg/ mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 18 X 76	463.00	10.80	280.00	17.30	10.00	428.40	408.40	144.00	113.10	55.600.00	2.402.00	19.60	6.335.00	452.00	6.63	2.673.00	691.00	119.00
WF 18 X 86	467.00	12.20	282.00	19.60	10.00	427.80	407.80	164.00	127.98	63.700.00	2.728.00	19.70	7.333.00	520.00	6.70	3.049.00	796.00	173.00
WF 18 X 97	472.00	13.60	283.00	22.10	10.00	427.80	407.80	184.00	144.35	72.610.00	3.076.00	19.90	8.358.00	591.00	6.74	3.454.00	906.00	246.00
WF 18 X 106	476.00	15.00	284.00	23.90	10.00	428.20	408.20	201.00	157.75	79.630.00	3.346.00	19.90	9.137.00	643.00	6.74	3.774.00	989.00	314.00
WF 18 X 119	482.00	16.60	286.00	26.90	10.00	428.20	408.20	226.00	177.09	91.010.00	3.776.00	20.10	10.510.00	735.00	6.82	4.280.00	1.131.00	445.00
WF 18 X 130	489.00	17.00	283.00	30.50	10.00	428.00	408.00	246.00	193.46	102.400.00	4.186.00	20.40	11.540.00	816.00	6.85	4.754.00	1.253.00	607.00
WF 18 X 143	495.00	18.50	285.00	33.50	10.00	428.00	408.00	271.00	212.81	114.300.00	4.619.00	20.50	12.950.00	909.00	6.91	5.272.00	1.398.00	803.00
WF 18 X 158	501.00	20.60	287.00	36.60	10.00	427.80	407.80	299.00	235.13	127.300.00	5.083.00	20.60	14.450.00	1.007.00	6.95	5.839.00	1.554.00	1.059.00
WF 18 X 175	509.00	22.60	289.00	40.40	10.00	428.20	408.20	331.00	260.43	143.700.00	5.646.00	20.80	16.300.00	1.128.00	7.01	6.525.00	1.743.00	1.423.00
WF 18 X 192	517.00	24.40	291.00	44.40	10.00	428.20	408.20	364.00	285.73	161.100.00	6.231.00	21.00	18.290.00	1.257.00	7.09	7.243.00	1.945.00	1.877.00
WF 18 X 211	525.00	26.90	293.00	48.50	10.00	428.00	408.00	400.00	314.00	179.800.00	6.851.00	21.20	20.400.00	1.393.090	7.14	8.021.00	2.161.00	2.461.00
WF 18 X 234	535.00	29.50	296.00	53.60	10.00	427.80	407.80	444.00	348.23	204.200.00	7.635.00	21.40	23.260.00	1.572.00	7.24	9.006.00	2.443.00	3.323.00
WF 18 X 258	545.00	32.50	299.00	58.40	10.00	428.20	408.20	489.00	383.95	229.400.00	8.417.00	21.70	26.140.00	1.749.00	7.31	10.000.00	2.725.00	4.339.00
WF 18 X 283	555.00	35.60	302.00	63.50	10.00	428.00	408.00	537.00	421.15	256.600.00	9.246.00	21.90	29.310.00	1.941.00	7.39	11.070.00	3.033.00	5.621.00
WF 18 X 311	567.00	38.60	305.00	69.60	10.00	427.80	407.80	591.00	462.82	289.900.00	10.230.00	22.20	33.120.00	2.172.00	7.49	12.340.00	3.398.00	7.385.00
WF 21 X 44	525.00	8.90	165.00	11.40	13.00	502.20	476.20	83.80	65.48	35100.00	1337.00	20.50	857.00	104.00	3.20	1563.00	166.00	33.30
WF 21 X 50	529.00	9.70	166.00	13.60	13.00	501.80	475.80	95.30	74.41	41100.00	1554.00	20.80	1042.00	125.00	3.31	1810.00	200.00	49.20
WF 21 X 57	535.00	10.30	166.00	16.50	13.00	502.00	476.00	108.00	84.83	48580.00	1816.00	21.20	1264.00	152.00	3.42	2105.00	242.00	74.50
WF 21 X 62	533.00	10.20	209.00	15.60	13.00	501.80	475.80	118.00	92.27	55.290.00	2.075.00	21.70	2.379.00	228.00	4.49	2.365.00	355.00	77.20
WF 21 X 68	537.00	10.90	210.00	17.40	13.00	502.20	476.20	129.00	101.20	61.740.00	2.300.00	21.90	2.692.00	256.00	4.56	2.622.00	400.00	103.00
WF 21 X 73	539.00	11.60	211.00	18.80	13.00	501.40	475.40	139.00	108.64	66.770.00	2.478.00	21.90	2.951.00	280.00	4.61	2.829.00	437.00	128.00
WF 21 X 83	544.00	13.10	212.00	21.20	13.00	501.60	475.60	157.00	123.52	76.120.00	2.799.00	22.00	3.377.00	319.00	4.64	3.210.00	499.00	183.00
WF 21 X 93	549.00	14.70	214.00	23.60	13.00	501.80	475.80	176.00	138.40	86.120.00	3.138.00	22.10	3.870.00	362.00	4.69	3.615.00	569.00	254.00
WF 21 X 101	543.00	12.70	312.00	20.30	13.00	502.40	476.40	192.00	150.30	100.900.00	3.716.00	22.90	10.290.00	659.00	7.32	4.148.00	1.010.00	218.00
WF 21 X 111	546.00	14.00	313.00	22.20	13.00	501.60	475.60	211.00	165.19	111.000.00	4.066.00	23.00	11.360.00	726.00	7.34	4.556.00	1.113.00	286.00
WF 21 X 122	551.00	15.20	315.00	24.40	13.00	502.20	476.20	232.00	181.56	123.600.00	4.486.00	23.10	12.730.00	808.00	7.41	5.042.00	1.241.00	378.00
WF 21 X 132	554.00	16.50	316.00	26.30	13.00	501.40	475.40	250.00	196.44	134.000.00	4.839.00	23.10	13.850.00	877.00	7.44	5.459.00	1.349.00	475.00
WF 21 X 147	560.00	18.30	318.00	29.20	13.00	501.60	475.60	279.00	218.76	151.100.00	5.396.00	23.30	15.680.00	986.00	7.50	6.116.00	1.520.00	650.00
WF 21 X 166	571.00	19.00	315.00	34.50	13.00	502.00	476.00	314.00	247.04	177.500.00	6.219.00	23.80	18.000.00	1.143.00	7.57	7.063.00	1.759.00	986.00
WF 21 X 182	577.00	21.10	317.00	37.60	13.00	501.80	475.80	346.00	270.85	196.800.00	6.821.00	23.90	20.000.00	1.262.00	7.61	7.793.00	1.947.00	1.289.00
WF 21 X 201	585.00	23.10	319.00	41.40	13.00	502.20	476.20	382.00	299.12	220.800.00	7.548.00	24.10	22.450.00	1.408.00	7.67	8.672.00	2.176.00	1.718.00
WF 21 X 223	593.00	25.40	322.00	45.50	13.00	502.00	476.00	422.00	331.86	247.800.00	8.356.00	24.20	25.390.00	1.577.00	7.76	9.658.00	2.442.00	2.290.00
WF 21 X 248	603.00	26.20	324.00	50.50	13.00	502.00	476.00	460.00	369.07	278.900.00	9.252.00	24.60	28.710.00	1.772.00	7.90	10.730.00	2.739.00	3.030.00
WF 21 X 275	613.00	31.00	327.00	55.60	13.00	501.80	475.80	521.00	409.25	316.900.00	10.340.00	24.70	32.530.00	1.990.00	7.90	12.120.00	3.096.00	4.191.00
WF 21 X 300	623.00	33.50	330.00	60.50	13.00	502.00	476.00	569.00	446.45	353.300.00	11.340.00	24.90	36.400.00	2.206.00	8.00	13.380.00	3.438.00	5.400.00
WF 21 X 333	635.00	37.10	334.00	66.50	13.00	502.00	476.00	632.00	495.56	400.600.00	12.620.00	25.20	41.520.00	2.486.00	8.11	15.000.00	3.885.00	7.236.00
WF 21 X 364	647.00	40.40	337.00	72.40	13.00	502.20	476.20	692.00	541.69	448.400.00	13.860.00	25.50	46.470.00	2.758.00	8.19	16.600.00	4.319.00	9.364.00
WF 21 X 402	661.00	43.90	340.00	79.50	13.00	502.00	476.00	762.00	598.24	507.000.00	15.340.00	25.80	52.440.00	3.085.00	8.29	18.520.00	4.841.00	12.350.00
WF 24 X 55	599.00	10.00	178.00	12.80	13.00	573.40	547.40	104.00	81.85	56.030.00	1.871.00	23.20	1.209.00	136.00	3.40	2.199.00	218.00	50.60
WF 24 X 62	603.00	10.90	179.00	15.00	13.00	573.00	547.00	118.00	92.27	64.680.00	2.145.00	23.50	1.441.00	161.00	3.50	2.515.00	259.00	72.80
WF 24 X 68	603.00	10.50	228.00	14.90	13.00	573.20	547.20	130.00	101.20	76.410.00	2.534.00	24.30	2.950.00	259.00	4.77	2.902.00	404.00	79.60
WF 24 X 76	608.00	11.20	228.00	17.30	13.00	573.40	547.40	145.00	113.10	87.600.00	2.882.00	24.60	3.425.00	300.00	4.87	3.292.00	469.00	113.00
WF 24 X 84	612.00	11.90	229.00	19.60	13.00	572.80	546.80	159.00	125.01	98.590.00	3.222.00	24.90	3.932.00	343.00	4.97	3.676.00	535.00	156.00
WF 24 X 94	617.00	13.10	230.00	22.20	13.00	572.60	546.60	179.00	139.89	112.000.00	3.631.00	25.00	4.514.00	393.00	5.03	4.152.00	613.00	220.00
WF 24 X 103	623.00	14.00	229.00	24.90	13.00	573.20	547.20	196.00	153.00	125.200.00	4.019.00	25.29	4.998.00	436.50	5.05	4.602.00	682.40	297.50

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



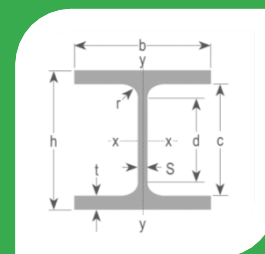
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
DESIGNACIÓN	h	s	b	t	r	c	d	cm2	kg/ mt	lx	Sx	rx	ly	Sy	ry	Zx	Zy	Jt
	mm	mm	mm	mm	mm	mm	mm			cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 24 x 104	611.00	12.70	324.00	19.00	13.00	573.00	547.00	197.00	154.77	129.000.00	4.222.00	25.60	10.780.00	666.00	7.39	4.728.00	1.022.00	198.00
WF 24 x 117	616.00	14.00	325.00	21.60	13.00	572.80	546.80	222.00	174.12	147.200.00	4.778.00	25.70	12.370.00	761.00	7.46	5.362.00	1.170.00	283.00
WF 24 x 131	622.00	15.40	327.00	24.40	13.00	573.20	547.20	249.00	194.95	167.900.00	5.398.00	26.00	14.240.00	871.00	7.56	6.074.00	1.340.00	401.00
WF 24 x 146	628.00	16.50	328.00	27.70	13.00	572.60	546.60	278.00	217.27	190.800.00	6.076.00	26.20	16.310.00	995.00	7.67	6.848.00	1.531.00	565.00
WF 24 x 162	635.00	17.90	329.00	31.00	13.00	573.00	547.00	308.00	241.08	215.400.00	6.785.00	26.40	18.430.00	1.120.00	7.74	7.671.00	1.725.00	776.00
WF 24 x 176	641.00	19.00	327.00	34.00	13.00	573.00	547.00	333.00	261.92	236.000.00	7.363.00	26.60	19.850.00	1.214.00	7.72	8.349.00	1.871.00	998.00
WF 24 x 192	647.00	20.60	329.00	37.10	13.00	572.80	546.80	364.00	285.73	260.700.00	8.059.00	26.80	22.060.00	1.341.00	7.79	9.175.00	2.071.00	1.295.00
WF 24 x 207	653.00	22.10	330.00	39.90	13.00	573.20	547.20	391.00	308.05	283.700.00	8.688.00	26.90	23.950.00	1.452.00	7.82	9.929.00	2.245.00	1.608.00
WF 24 x 229	661.00	24.40	333.00	43.90	13.00	573.20	547.20	434.00	340.79	318.300.00	9.630.00	27.10	27.090.00	1.627.00	7.90	11.070.00	2.522.00	2.153.00
WF 24 x 250	669.00	26.40	335.00	48.00	13.00	573.00	547.00	474.00	372.04	353.200.00	10.560.00	27.30	30.170.00	1.801.00	1.98	12.190.00	2.796.00	2.802.00
WF 24 x 279	679.00	29.50	338.00	53.10	13.00	572.80	546.80	529.00	415.20	399.800.00	11.780.00	27.50	34.300.00	2.030.00	8.05	13.690.00	3.160.00	3.824.00
WF 24 x 306	689.00	32.00	340.00	57.90	13.00	573.20	547.20	579.00	455.38	444.500.00	12.900.00	27.70	38.090.00	2.241.00	8.11	15.090.00	3.496.00	4.948.00
WF 24 x 335	699.00	35.10	343.00	63.00	13.00	573.00	547.00	635.00	498.54	494.700.00	14.150.00	27.90	42.580.00	2.483.00	8.19	16.670.00	3.885.00	6.420.00
WF 24 x 370	711.00	38.60	347.00	69.10	13.00	572.80	546.80	702.00	550.62	557.500.00	15.680.00	28.20	48.400.00	2.790.00	8.30	18.600.00	4.377.00	8.525.00
WF 24 x 408	725.00	41.90	351.00	75.90	13.00	573.20	547.20	774.00	607.17	630.700.00	17.400.00	28.50	55.060.00	3.137.00	8.43	20.780.00	4.931.00	11.280.00
WF 24 x 450	739.00	46.00	354.00	83.10	13.00	572.80	546.80	853.00	669.67	709.400.00	19.200.00	28.80	61.920.00	3.498.00	8.52	23.110.00	5.514.00	14.850.00
WF 24 x 492	753.00	50.00	359.00	89.90	13.00	573.20	547.20	934.00	732.18	793.500.00	21.080.00	29.20	69.930.00	3.896.00	8.66	25.550.00	6.155.00	18.980.00
WF 27 x 84	678.00	11.70	253.00	16.30	15.00	645.40	615.40	160.00	125.01	118.500.00	3.495.00	27.20	4.410.00	349.00	5.25	4.009.00	546.00	119.00
WF 27 x 94	684.00	12.40	254.00	18.90	15.00	646.20	616.20	178.00	139.89	136.100.00	3.979.00	27.60	5.174.00	407.00	5.39	4.549.00	636.00	168.00
WF 27 x 102	688.00	13.10	254.00	21.10	15.00	645.80	615.80	194.00	151.79	150.600.00	4.378.00	27.90	5.777.00	455.00	5.46	5.002.00	710.00	221.00
WF 27 x 114	693.00	14.50	256.00	23.60	15.00	645.80	615.80	216.00	169.65	169.900.00	4.904.00	28.00	6.618.00	517.00	5.53	5.618.00	809.00	307.00
WF 27 x 129	702.00	15.50	254.00	27.90	15.00	646.20	616.20	244.00	192.00	197.900.00	5.639.00	28.49	7.643.00	601.80	5.60	6.457.00	941.00	463.20
WF 27 x 146	695.00	15.40	355.00	24.80	15.00	645.40	615.40	277.00	217.27	234.300.00	6.742.00	29.10	18.510.00	1.043.00	8.17	7.566.00	1.603.00	459.00
WF 27 x 161	701.00	16.80	356.00	27.40	15.00	646.20	616.20	306.00	239.59	261.200.00	7.451.00	29.20	20.630.00	1.159.00	8.22	8.386.00	1.784.00	612.00
WF27 x 178	706.00	18.40	358.00	30.20	15.00	645.60	615.60	337.00	264.89	290.300.00	8.223.00	29.40	23.130.00	1.292.00	8.29	9.285.00	1.992.00	817.00
WF 27 x 194	714.00	19.00	356.00	34.00	15.00	646.00	616.00	367.00	288.70	324.700.00	9.096.00	29.80	25.610.00	1.439.00	8.36	10.270.00	2.215.00	1.099.00
WF27 x217	722.00	21.10	359.00	38.10	15.00	645.80	615.80	412.00	322.93	369.500.00	10.240.00	30.00	29.430.00	1.640.00	8.45	11.620.00	2.530.00	1.543.00
WF 27 x 235	728.00	23.10	360.00	40.90	15.00	646.20	616.20	446.00	349.72	401.900.00	11.040.00	30.00	31.870.00	1.771.00	8.46	12.590.00	2.739.00	1.927.00
WF 27 x 258	736.00	24.90	362.00	45.00	15.00	646.00	616.00	489.00	383.95	447.400.00	12.160.00	30.30	35.670.00	1.971.00	8.54	13.920.00	3.052.00	2.541.00
WF 27 x 281	744.00	26.90	364.00	49.00	15.00	646.00	616.00	532.00	418.17	493.900.00	13.280.00	30.50	39.500.00	2.170.00	8.61	15.260.00	3.366.00	3.270.00
WF 27 x 307	752.00	29.50	367.00	53.10	15.00	645.80	615.80	582.00	456.87	545.000.00	14.500.00	30.60	43.890.00	2.392.00	8.68	16.760.00	3.720.00	4.200.00
WF 27 x 336	762.00	32.00	369.00	57.90	15.00	646.20	616.20	636.00	500.02	604.700.00	15.870.00	30.80	48.670.00	2.638.00	8.75	18.450.00	4.111.00	5.433.00
WF 27 x 358	772.00	35.10	372.00	63.00	15.00	646.00	616.00	697.00	532.76	671.400.00	17.390.00	31.00	54.290.00	2.919.00	8.82	20.340.00	4.562.00	7.047.00
WF 27 x 407	784.00	38.60	376.00	69.10	15.00	645.80	615.80	771.00	605.68	754.600.00	19.250.00	31.30	61.540.00	3.273.00	8.93	22.660.00	5.129.00	9.352.00
WF 27 x 448	798.00	41.90	379.00	75.90	15.00	646.20	616.20	848.00	666.70	848.900.00	21.280.00	31.60	69.270.00	3.656.00	9.04	25.210.00	5.739.00	12.330.00
WF 27 x 494	812.00	46.00	383.00	83.10	15.00	645.80	615.80	936.00	735.15	954.400.00	23.510.00	31.90	78.350.00	4.091.00	9.15	28.060.00	6.442.00	16.270.00
WF 27 x 539	826.00	50.00	387.00	89.90	15.00	646.20	616.20	1.021.00	802.12	1.061.700.00	25.710.00	32.20	87.530.00	4.524.00	9.26	30.890.00	7.141.00	20.740.00
WF 30 x 99	753.00	13.20	265.00	17.00	17.00	719.00	685.00	187.00	147.33	166.100.00	4.411.00	29.80	5.289.00	399.00	5.31	5.110.00	631.00	162.00
WF 30 x 108	758.00	13.80	266.00	19.30	17.00	719.40	685.40	204.00	160.72	186.100.00	4.909.00	30.20	6.073.00	457.00	5.45	5.666.00	720.00	212.00
WF 30 x 116	762.00	14.40	267.00	21.60	17.00	718.80	684.80	221.00	172.63	205.800.00	5.402.00	30.50	6.873.00	515.00	5.57	6.218.00	810.00	274.00
WF 30 x 124	766.00	14.90	267.00	23.60	17.00	718.80	684.80	236.00	184.53	223.000.00	5.821.00	30.80	7.510.00	563.00	5.65	6.691.00	884.00	337.00
WF 30 x 132	770.00	15.60	268.00	25.40	17.00	719.20	685.20	251.00	196.44	240.300.00	6.241.00	31.00	8.175.00	610.00	5.71	7.174.00	959.00	409.00
WF 30 x 148	779.00	16.50	266.00	30.00	17.00	719.00	685.00	281.00	220.00	278.200.00	7.143.00	31.40	9.440.00	709.90	5.80	8.198.00	1.113.00	609.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



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4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



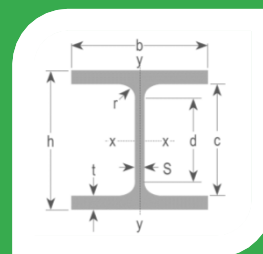
PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO																	
	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
DESIGNACIÓN	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y					
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry	Zx	Zy	
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/ mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 30 x 173	773.00	16.60	381.00	27.10	17.00	718.80	684.80	328.00	257.45	341.900.00	8.845.00	32.30	25.010.00	1.313.00	8.73	9.934.00	2.019.00	643.00
WF 30 x 191	779.00	18.00	382.00	30.10	17.00	718.80	684.80	362.00	284.24	381.500.00	9.794.00	32.50	28.000.00	1.466.00	8.80	11.020.00	2.258.00	866.00
WF 30 x 211	786.00	19.70	384.00	33.40	17.00	719.20	685.20	401.00	314.00	427.700.00	10.880.00	32.70	31.570.00	1.644.00	8.88	12.290.00	2.536.00	1.172.00
WF 30 x 235	795.00	21.10	382.00	38.10	17.00	718.80	684.40	445.00	349.72	485.700.00	12.220.00	33.00	35.460.00	1.856.00	8.92	13.830.00	2.863.00	1.662.00
WF 30 x 261	803.00	23.60	385.00	41.90	17.00	719.20	685.20	495.00	388.41	544.000.00	13.550.00	33.20	39.940.00	2.075.00	8.98	15.420.00	3.209.00	2.237.00
WF 30 x 292	813.00	25.90	387.00	47.00	17.00	719.00	685.00	552.00	434.54	617.700.00	15.190.00	33.40	45.510.00	2.352.00	9.08	17.370.00	3.644.00	3.117.00
WF 30 x 326	823.00	29.00	390.00	52.10	17.00	718.80	684.80	617.00	485.14	697.600.00	16.950.00	33.60	51.660.00	2.649.00	9.15	19.500.00	4.118.00	4.276.00
WF 30 x 357	833.00	31.50	393.00	56.90	17.00	719.20	685.20	676.00	531.28	775.500.00	18.620.00	33.90	57.760.00	2.939.00	9.24	21.520.00	4.577.00	5.567.00
WF 30 x 391	843.00	34.50	396.00	62.00	17.00	719.00	685.00	742.00	581.87	860.400.00	20.410.00	34.10	64.430.00	3.254.00	9.32	23.720.00	5.080.00	7.238.00
WF 30 x 433	855.00	38.10	399.00	68.10	17.00	718.80	684.80	820.00	644.38	964.400.00	22.560.00	34.30	72.440.00	3.631.00	9.40	26.390.00	5.687.00	9.634.00
WF 30 x 477	869.00	41.40	403.00	74.90	17.00	719.20	685.20	904.00	709.86	1.086.000.00	24.990.00	34.70	82.140.00	4.077.00	9.53	29.410.00	6.396.00	12.780.00
WF 30 x 526	883.00	45.50	407.00	82.00	17.00	719.00	685.00	997.00	782.78	1.218.500.00	27.600.00	35.00	92.720.00	4.556.00	9.64	32.700.00	7.170.00	16.860.00
WF 30 x 581	899.00	50.00	411.00	89.90	17.00	719.20	685.20	1.101.00	864.62	1.372.500.00	30.530.00	35.30	104.800.00	5.099.00	9.76	36.450.00	8.050.00	22.310.00
WF 33 x 118	835.00	14.00	292.00	18.80	18.00	797.40	761.40	224.00	175.60	246.400.00	5.901.00	33.10	7.823.00	536.00	5.91	6.816.00	844.00	227.00
WF 33 x 130	840.00	14.70	292.00	21.70	18.00	796.60	760.60	247.00	193.46	278.400.00	6.630.00	33.60	9.029.00	618.00	6.05	7.627.00	971.00	310.00
WF 33 x 141	846.00	15.40	293.00	24.40	18.00	797.20	761.20	269.00	209.83	310.700.00	7.346.00	34.00	10.260.00	700.00	6.18	8.430.00	1.093.00	409.00
WF 33 x 152	851.00	16.10	294.00	26.80	18.00	797.40	761.40	289.00	226.20	340.100.00	7.992.00	34.30	11.380.00	774.00	6.28	9.163.00	1.213.00	518.00
WF 33 x 169	859.00	17.00	292.00	31.00	18.00	797.00	761.00	319.00	251.00	386.500.00	8.999.00	34.79	12.900.00	883.60	6.36	10.304.00	1.383.00	737.60
WF 33 x 201	855.00	18.20	400.00	29.20	18.00	796.60	760.60	381.00	299.12	479.400.00	11.210.00	35.50	31.190.00	1.560.00	9.04	12.640.00	2.406.00	863.00
WF 33 x 221	862.00	19.70	401.00	32.40	18.00	797.20	761.20	420.00	328.88	534.800.00	12.410.00	37.70	34.880.00	1.739.00	9.12	14.020.00	2.686.00	1.155.00
WF 33 x 241	868.00	21.10	403.00	35.60	18.00	796.80	760.80	458.00	358.65	590.600.00	13.610.00	35.90	38.900.00	1.931.00	9.22	15.400.00	2.984.00	1.507.00
WF 33 x 263	877.00	22.10	401.00	39.90	18.00	797.20	761.20	499.00	391.39	658.600.00	15.020.00	36.30	42.960.00	2.143.00	9.28	17.010.00	3.310.00	2.021.00
WF 33 x 291	885.00	24.40	404.00	43.90	18.00	797.20	761.20	552.00	433.06	735.300.00	16.620.00	36.50	48.350.00	2.394.00	9.36	18.900.00	3.706.00	2.702.00
WF33 x 318	893.00	26.40	406.00	48.00	18.00	797.00	761.00	603.00	473.24	812.200.00	18.190.00	36.70	53.670.00	2.644.00	9.43	20.770.00	4.100.00	3.512.00
WF 33 x 354	903.00	29.50	409.00	53.10	18.00	796.80	760.80	672.00	526.81	914.100.00	20.250.00	36.90	60.730.00	2.970.00	9.51	23.250.00	4.620.00	4.788.00
WF 33 x 387	913.00	32.00	411.00	57.90	18.00	797.20	761.20	734.00	575.92	1.010.800.00	22.140.00	37.10	67.230.00	3.271.00	9.57	25.540.00	5.100.00	6.190.00
WF 33 x 424	923.00	35.10	414.00	63.00	18.00	797.00	761.00	804.00	630.98	1.118.600.00	24.240.00	37.30	74.810.00	3.614.00	9.64	28.110.00	5.650.00	8.026.00
WF 33 x 468	935.00	38.60	418.00	69.10	18.00	796.80	760.80	888.00	696.46	1.252.200.00	26.780.00	37.60	84.510.00	4.043.00	9.76	31.250.00	6.340.00	10.640.00
WF 33 x 515	949.00	41.90	421.00	75.90	18.00	797.20	761.20	976.00	766.41	1.402.200.00	29.550.00	37.90	94.900.00	4.508.00	9.86	34.670.00	7.083.00	14.030.00
WF 33 x 567	963.00	46.00	425.00	83.10	18.00	796.80	760.80	1.076.00	843.79	1.569.500.00	32.600.00	38.20	107.000.00	5.035.00	9.97	38.490.00	7.934.00	18.490.00
WF 33 x 619	977.00	50.00	430.00	89.90	18.00	797.20	761.20	1.175.00	921.18	1.741.700.00	35.650.00	38.50	120.000.00	5.581.00	10.10	42.350.00	8.818.00	23.600.00
WF 36 x 135	903.00	15.20	304.00	20.10	19.00	862.80	824.80	256.00	200.90	325.200.00	7.203.00	35.60	9.442.00	621.00	6.07	8.356.00	982.00	298.00
WF 36 x 150	911.00	15.90	304.00	23.90	19.00	863.00	825.20	286.00	223.23	376.800.00	8.273.00	36.30	11.220.00	738.00	6.27	9.540.00	1.163.00	427.00
WF 36 x 160	915.00	16.50	305.00	25.90	19.00	863.20	825.20	304.00	238.11	406.400.00	8.883.00	36.60	12.290.00	806.00	6.36	10.230.00	1.267.00	519.00
WF 36 x 170	919.00	17.30	306.00	27.90	19.00	863.20	825.20	323.00	252.99	437.500.00	9.520.00	36.80	13.370.00	874.00	6.43	10.960.00	1.375.00	631.00
WF 36 x 182	923.00	18.40	307.00	30.00	19.00	863.00	825.00	346.00	270.85	471.600.00	10.220.00	36.90	14.520.00	946.00	6.48	11.780.00	1.491.00	775.00
WF 36 x 194	927.00	19.40	308.00	32.00	19.00	863.00	825.00	368.00	288.70	504.500.00	10.880.00	37.00	15.640.00	1.016.00	6.52	12.570.00	1.603.00	930.00
WF 36 x 210	932.00	21.10	309.00	34.50	19.00	863.00	825.00	398.00	312.52	548.200.00	11.760.00	37.10	17.040.00	1.103.00	6.54	13.630.00	1.748.00	1.171.00

*** Importamos y comercializamos todo tipo de calidades y formatos especiales. Consulte con su asesor comercial



4

4.11 PERFIL H AMERICANO DE ALA ANCHA O WF



PERFIL H AMERICANO DE ALA ANCHA - WF																		
PERFILES WF	DIMENSIONES Y PROPIEDADES PARA EL DISEÑO																	
DESIGNACIÓN	DIMENSIONES							AREA	PESO	PROPIEDADES ELASTICAS						MODULO PLASTICO		CONS TORS
	ALTURA		ALA		DISTANCIAS					EJE X-X			EJE Y-Y			Zx	Zy	
	h	s	b	t	r	c	d			lx	Sx	rx	ly	Sy	ry			
	mm	mm	mm	mm	mm	mm	mm	cm2	kg/mt	cm4	cm3	cm	cm4	cm3	cm	cm3	cm3	cm4
WF 36 x 230	912.00	19.30	418.00	32.00	24.00	848.00	800.00	436.00	342.28	624.900.00	13.700.00	37.90	39.010.00	1.867.00	9.46	15.450.00	2.882.00	1.193.00
WF 36 x 245	916.00	20.30	419.00	34.30	24.00	847.40	799.40	464.00	364.60	670.500.00	14.640.00	38.00	42.120.00	2.011.00	9.52	16.520.00	3.106.00	1.446.00
WF 36 x 260	921.00	21.30	420.00	36.60	24.00	847.80	799.80	493.00	386.92	718.300.00	15.600.00	38.20	45.280.00	2.156.00	9.58	17.630.00	3.332.00	1.734.00
WF 36 x 280	928.00	22.50	422.00	39.90	24.00	848.20	800.20	533.00	416.69	787.600.00	16.970.00	38.50	50.070.00	2.373.00	9.70	19.210.00	3.668.00	2.200.00
WF 36 x 300	933.00	24.00	423.00	42.70	24.00	847.60	799.60	570.00	446.45	846.800.00	18.150.00	38.60	53.980.00	2.552.00	9.73	20.600.00	3.951.00	2.685.00
WF 36 x 328	942.00	25.90	422.00	47.00	24.00	848.00	800.00	621.00	488.12	935.400.00	19.860.00	38.80	59.010.00	2.797.00	9.75	22.610.00	4.336.00	3.514.00
WF 36 x 359	950.00	28.40	425.00	51.10	24.00	847.80	799.80	680.00	534.25	1.031.200.00	21.710.00	38.90	65.560.00	3.085.00	9.82	24.830.00	4.796.00	4.542.00
WF 36 x 393	960.00	31.00	427.00	55.90	24.00	848.20	800.20	745.00	584.85	1.143.100.00	23.810.00	39.20	72.770.00	3.408.00	9.88	27.360.00	5.310.00	5.932.00
WF 36 x 439	972.00	34.50	431.00	62.00	24.00	848.00	800.00	832.00	653.31	1.292.100.00	26.590.00	39.40	83.050.00	3.854.00	9.99	30.730.00	6.022.00	8.124.00
WF 36 x 485	984.00	38.10	434.00	68.10	24.00	847.80	799.80	919.00	721.76	1.444.100.00	29.350.00	39.60	93.200.00	4.295.00	10.10	34.120.00	6.733.00	10.800.00
WF 36 x 527	996.00	40.90	437.00	73.90	24.00	848.20	800.20	998.00	784.26	1.592.500.00	31.980.00	40.00	103.300.00	4.728.00	10.20	37.340.00	7.424.00	13.730.00
WF 36 x 588	1.012.00	45.50	442.00	82.00	24.00	848.00	800.00	1.116.00	875.04	1.811.300.00	35.800.00	40.30	118.700.00	5.372.00	10.30	42.090.00	8.463.00	18.850.00
WF 36 x 650	1.028.00	50.00	446.00	89.90	24.00	848.20	800.20	1.231.00	967.31	2.032.600.00	39.540.00	40.60	133.900.00	6.003.00	10.40	46.810.00	9.486.00	24.930.00
WF 36 x 720	1.046.00	55.00	451.00	99.10	24.00	847.80	799.80	1.365.00	1.071.48	2.299.000.00	43.960.00	41.00	152.700.00	6.774.00	10.60	52.410.00	10.740.00	33.450.00
WF 36 x 798	1.066.00	60.50	457.00	109.00	24.00	848.00	800.00	1.514.00	1.187.56	2.607.000.00	48.910.00	41.50	175.000.00	7.659.00	10.80	58.750.00	12.180.00	44.720.00
WF 36 x 848	1.078.00	64.00	461.00	115.10	24.00	847.80	799.80	1.609.00	1.261.97	2.805.200.00	52.040.00	41.80	189.900.00	8.237.00	10.90	62.800.00	13.120.00	52.910.00
WF 40 x 149	970.00	16.00	300.00	21.00	30.00	928.00	868.00	282.00	221.74	406.500.00	8.380.00	38.00	9.501.00	633.00	5.80	9.777.00	1.016.00	403.00
WF 40 x 167	980.00	16.50	300.00	26.00	30.00	928.00	868.00	317.00	248.52	481.100.00	9.818.00	39.00	11.750.00	784.00	6.09	11.350.00	1.245.00	584.00
WF 40 x 183	990.00	16.50	300.00	31.00	30.00	928.00	868.00	347.00	272.33	553.800.00	11.190.00	40.00	14.000.00	934.00	6.35	12.820.00	1.470.00	822.00
WF 40 x 211	1.000.00	19.00	300.00	36.00	30.00	928.00	868.00	400.00	314.00	644.700.00	12.890.00	40.10	16.280.00	1.085.00	6.38	14.860.00	1.716.00	1.254.00
WF 40 x 235	1.008.00	21.00	302.00	40.00	30.00	928.00	868.00	444.00	349.72	722.300.00	14.330.00	40.30	18.460.00	1.222.00	6.45	16.570.00	1.940.00	1.701.00
WF 40 x 174	970.00	16.50	400.00	21.00	30.00	928.00	868.00	329.00	258.94	504.400.00	10.400.00	39.20	22.450.00	1.123.00	8.26	11.880.00	1.755.00	483.00
WF 40 x 199	982.00	16.50	400.00	27.00	30.00	928.00	868.00	377.00	296.15	618.700.00	12.600.00	40.50	28.850.00	1.443.00	8.75	14.220.00	2.235.00	757.00
WF 40 x 215	990.00	16.50	400.00	31.00	30.00	928.00	868.00	409.00	319.96	696.400.00	14.070.00	41.30	33.120.00	1.656.00	9.00	15.800.00	2.555.00	1.021.00
WF 40 x 249	1.000.00	19.00	400.00	36.00	30.00	928.00	868.00	472.00	370.55	812.100.00	16.240.00	41.50	38.480.00	1.924.00	9.03	18.330.00	2.976.00	1.565.00
WF 40 x 277	1.008.00	21.00	402.00	40.00	30.00	928.00	868.00	524.00	412.22	909.800.00	18.050.00	41.70	43.410.00	2.160.00	9.10	20.440.00	3.348.00	2.128.00
WF 40 x 297	1.012.00	23.60	402.00	41.90	30.00	928.20	868.20	564.00	441.99	966.500.00	19.100.00	41.40	45.500.00	2.264.00	8.98	21.780.00	3.529.00	2.545.00
WF 40 x 324	1.020.00	25.40	404.00	46.00	30.00	928.00	868.00	615.00	482.17	1.067.500.00	20.930.00	41.70	50.710.00	2.510.00	9.08	23.920.00	3.919.00	3.311.00
WF 40 x 362	1.030.00	28.40	407.00	51.10	30.00	927.80	867.80	687.00	538.72	1.202.500.00	23.350.00	41.80	57.630.00	2.832.00	9.16	26.820.00	4.436.00	4.546.00
WF 40 x 397	1.040.00	31.00	409.00	55.90	30.00	928.20	868.20	753.00	590.80	1.331.000.00	25.600.00	42.10	64.010.00	3.130.00	9.22	29.530.00	4.916.00	5.927.00
WF 40 x 436	1.050.00	34.00	412.00	61.00	30.00	928.00	868.00	826.00	648.84	1.473.300.00	28.060.00	42.20	71.450.00	3.468.00	9.30	32.530.00	5.464.00	7.723.00
WF 40 x 480	1.062.00	37.10	416.00	67.10	30.00	927.80	867.80	910.00	714.32	1.646.600.00	31.010.00	42.50	80.960.00	3.892.00	9.43	36.110.00	6.145.00	10.240.00
WF 40 x 531	1.075.00	40.90	419.00	73.90	30.00	927.20	867.20	1.006.00	790.22	1.842.200.00	34.270.00	42.80	91.190.00	4.353.00	9.52	40.140.00	6.896.00	13.670.00
WF 40 x 593	1.092.00	45.50	424.00	82.00	30.00	928.00	868.00	1.125.00	882.48	2.096.400.00	38.400.00	43.20	105.000.00	4.952.00	9.66	45.260.00	7.874.00	18.750.00
WF 40 x 655	1.108.00	50.00	428.00	89.90	30.00	928.20	868.20	1.241.00	974.75	2.348.700.00	42.400.00	43.50	118.500.00	5.538.00	9.77	50.300.00	8.839.00	24.770.00
WF 40 x 192	970.00	18.00	450.00	21.00	30.00	928.00	868.00	364.00	285.73	561.600.00	11.580.00	39.30	31.960.00	1.420.00	9.37	13.200.00	2.214.00	574.00
WF 40 x 221	982.00	18.00	450.00	27.00	30.00	928.00	868.00	418.00	328.88	690.200.00	14.060.00	40.60	41.070.00	1.825.00	9.92	15.830.00	2.821.00	882.00
WF 40 x 244	992.00	18.00	450.00	32.00	30.00	928.00	868.00	463.00	363.11	799.800.00	16.130.00	41.60	48.670.00	2.163.00	10.30	18.050.00	3.327.00	1.268.00
WF 40 x 268	1.000.00	19.00	451.00	36.00	30.00	928.00	868.00	509.00	398.83	897.400.00	17.950.00	42.00	55.120.00	2.444.00	10.40	20.100.00	3.757.00	1.724.00
WF 40 x 298	1.008.00	21.00	453.00	40.00	30.00	928.00	868.00	565.00	443.47	1.005.400.00	19.950.00	42.20	62.070.00	2.740.00	10.50	22.410.00	4.220.00	2.346.00
WF 40 x 328	1.016.00	23.00	455.00	44.00	30.00	928.00	868.00	622.00	488.12	1.115.700.00	21.960.00	42.40	69.200.00	3.042.00	10.60	24.760.00	4.691.00	3.103.00
WF 44 x 198	1.090.00	18.00	300.00	31.00	20.00	1.028.00	988.00	374.00	294.66	693.500.00	12.720.00	43.00	14.010.00	934.00	6.12	14.780.00	1.483.00	839.00
WF 44 x 224	1.100.00	20.00	300.00	36.00	20.00	1.028.00	988.00	425.00	333.35	801.500.00	14.570.00	43.40	16.280.00	1.085.00	6.19	16.950.00	1.728.00	1.253.00
WF 44 x 248	1.108.00	22.00	302.00	40.00	20.00	1.028.00	988.00	471.00	369.07	897.300.00	16.200.00	43.60	18.460.00	1.223.00	6.26	18.890.00	1.95	

4

4.12 EQUIVALENCIAS ENTRE PERFILES EUROPEOS (IPE, HE, IPN, HD) Y AMERICANOS (WF Y S)

EQUIVALENCIAS ENTRE PERFILES						
EQUIVALENCIAS APROXIMADAS ENTRE PERFILES						
PERFIL WF	PERFIL S	PERFIL HEA	PERFIL HEB	PERFIL IPE	PERFIL IPN	PERFIL HD
NORMA ASTM	NORMA ASTM	NORMA DIN	NORMA DIN	NORMA DIN	NORMA DIN	NORMA ASTM
WF 4 X 13		HEA 100	HEB 100			
WF 4 X 13.8		HEA A 120	HEB 100			
WF 4 X 16.3		HEA 120	HEB 100			
WF 5 X 16		HEA 120, HEA A 140	HEB 120			
WF 5 X 19		HEA 140, HEA A160	HEB 140			
WF 6 X 9	S 6 X 12.2	HEA A 120		IPE 160, IPE 180	IPN 140	
WF 6 X 12		HEA 120, HEA A 140		IPE 180	IPN 160	
WF 6 X 15		HEA 140, HEA A 160				
WF 6 X 20		HEA 160, HEA A 180				
WF 6 X 25		HEA 180	HEB 160			
WF 8 X 10				IPE 180, IPE A 200		
WF 8 X 13				IPE A 200, IPE 200	IPN 180	
WF 8 X 15				IPE 200, IPE A 200	IPN 200	
WF 8 X 18	S 8 X 18.4			IPE 220, IPE A 240		
WF 8 X 21		HEA 180		IPE 240	IPN 220	
WF 8 X 24		HEA A 200, HEA 200		IPE 240		
WF 8 X 28		HEA 200, HEA A 200	HEB 160			
WF 8 X 31		HEA 220	HEB 180			
WF 8 X 35		HEA 220, HEA A 240	HEB 180			
WF 8 X 40		HEA 240	HEB 200			
WF 8 X 48			HEB 220			
WF 8 X 58			HEB 240			HD 210 X 87
WF 8 X 67			HEB 260			HD 210 X 100
WF 10 X 12				IPE A 200, IPE 200		
WF 10 X 15				IPE A 220, IPE 220		
WF 10 X 17				IPE A 240, IPE 240		
WF 10 X 19				IPE A 270, IPE 270		
WF 10 X 22				IPE 270	IPN 240	
WF 10 X 26	S 10 X 25.4			IPE 270, IPE A 300	IPN 260	
WF 10 X 30		HEA A 240, HEA 240		IPE 300		
WF 10 X 33		HEA 240		IPE 300		
WF 10 X 39		HEA 240, HEA A 260				
WF 10 X 45		HEA 260, HEA A 280	HEB 220			
WF 10 X 49		HEA 280	HEB 240			HD 260 X 73
WF 10 X 54		HEA 280, HEA A 300	HEB 260			HD 260 X 80
WF 10 X 60		HEA 300	HEB 260			HD 260 X 89
WF 10 X 68			HEB 280			HD 260 X 101
WF 10 X 77			HEB 300			HD 260 X 115
WF 10 X 88						HD 260 X 131
WF 10 X 100						HD 260 X 149
WF 10 X 112						HD 260 X 167

*** Estas equivalencias brindan apoyo al departamento comercial. No deben ser usadas sin la supervisión de un profesional competente en el diseño de estructuras metálicas.



4

4.12 EQUIVALENCIAS ENTRE PERFILES EUROPEOS (IPE, HE, IPN, HD) Y AMERICANOS (WF Y S)

EQUIVALENCIAS ENTRE PERFILES						
EQUIVALENCIAS APROXIMADAS ENTRE PERFILES						
PERFIL WF	PERFIL S	PERFIL HEA	PERFIL HEB	PERFIL IPE	PERFIL IPN	PERFIL HD
NORMA ASTM	NORMA ASTM	NORMA DIN	NORMA DIN	NORMA DIN	NORMA DIN	NORMA ASTM
WF 12 X 14				IPE A 240, IPE 240		
WF 12 X 16				IPE A 270, IPE 270	IPN 240	
WF 12 X 19				IPE 270, IPE A 300		
WF 12 X 22				IPE A 300, IPE 300		
WF 12 X 26				IPE 300, IPE A 330	IPN 260	
WF 12 X 30	S 12 X 31.8			IPE A 330, IPE 330	IPN 280	
WF 12 X 35	S 12 X 35			IPE 330, IPE A 360	IPN 300	
WF 12 X 40		HEA 240, HEA A 260		IPE 360		
WF 12 X 45		HEA 260, HEA A 280				
WF 12 X 50		HEA 280, HEA A 300				
WF 12 X 53		HEA A 300, HEA 300				
WF 12 X 58		HEA 300, HEA A 320	HEB 260			
WF 12 X 65		HEA 320, HEA A 340	HEB 260			HD 310 X 97
WF 12 X 72		HEA A 340, HEA 340	HEB 280, HEB 300			HD 310 X 107
WF 12 X 79		HEA 340, HEA A 360	HEB 300			HD 310 X 117
WF 12 X 87		HEA 360	HEB 320			HD 310 X 130
WF 12 X 96			HEB 340			HD 310 X 143
WF 12 X 106						HD 310 X 158
WF 12 X 120						HD 310 X 179
WF 12 X 136						HD 310 X 202
WF 12 X 152						HD 310 X 227
WF 12 X 170						HD 310 X 253
WF 12 X 190						HD 310 X 283
WF 12 X 210						HD 310 X 313
WF 12 X 230						HD 310 X 343
WF 12 X 252						HD 310 X 375
WF 12 X 279						HD 310 X 415
WF 12 X 305						HD 310 X 454
WF 12 X 336						HD 310 X 500
WF 14 X 22				IPE A 300, IPE 300		
WF 14 X 26				IPE A 330, IPE 330		
WF 14 X 30				IPE A 360, IPE 360		
WF 14 X 34				IPE 360		
WF 14 X 38				IPE 360		
WF 14 X 43	S 15 X 42.9	HEA 280, HEA A 300		IPE 360, IPE A 400	IPN 340	
WF 14 X 48		HEA 300, HEA A 340		IPE A 400, IPE 400		
WF 14 X 53		HEA A 340, HEA 340		IPE 400, IPE 450	IPN 360	
WF 14 X 61		HEA 340, HEA A 360		IPE 450, IPE A 500		
WF 14 X 68		HEA 340, HEA 360				
WF 14 X 74	S 15 X 50	HEA 360, HEA A 400	HEB 320, HEB 340			
WF 14 X 82		HEA 400	HEB 340, HEB 360			

*** Estas equivalencias brindan apoyo al departamento comercial. No deben ser usadas sin la supervisión de un profesional competente en el diseño de estructuras metálicas.



4

4.12 EQUIVALENCIAS ENTRE PERFILES EUROPEOS (IPE, HE, IPN, HD) Y AMERICANOS (WF Y S)

EQUIVALENCIAS ENTRE PERFILES						
EQUIVALENCIAS APROXIMADAS ENTRE PERFILES						
PERFIL WF	PERFIL S	PERFIL HEA	PERFIL HEB	PERFIL IPE	PERFIL IPN	PERFIL HD
NORMA ASTM	NORMA ASTM	NORMA DIN	NORMA DIN	NORMA DIN	NORMA DIN	NORMA ASTM
WF 14 X 90		HEA 400	HEB 360			HD 360 X 134
WF 14 X 99		HEA 450	HEB 400			HD 360 X 148
WF 14 X 109			HEB 450			HD 360 X 162
WF 14 X 120			HEB 500			HD 360 X 179
WF 14 X 132			HEB 550			HD 360 X 196
WF 14 X 145			HEB 600			HD 400 X 216
WF 14 X 159						HD 400 X 237
WF 14 X 176						HD 400 X 262
WF 14 X 193						HD 400 X 288
WF 14 X 211						HD 400 X 314
WF 14 X 233						HD 400 X 347
WF 14 X 257						HD 400 X 383
WF 14 X 283						HD 400 X 422
WF 14 X 311						HD 400 X 463
WF 14 X 342						HD 400 X 509
WF 14 X 370						HD 400 X 551
WF 14 X 398						HD 400 X 593
WF 14 X 426						HD 400 X 634
WF 14 X 455						HD 400 X 678
WF 14 X 500						HD 400 X 744
WF 14 X 550						HD 400 X 818
WF 14 X 605						HD 400 X 900
WF 14 X 665						HD 400 X 990
WF 14 X 730						HD 400 X 1086
WF 16 X 26				IPE 330, IPE A 360		
WF 16 X 31				IPE 360, IPE A 400		
WF 16 X 36				IPE 360, IPE 400		
WF 16 X 40	S 15 X 42.9			IPE A 400, IPE 400		
WF 16 X 45				IPE A 400, IPE 400		
WF 16 X 50	S 15 X 50			IPE 400, IPE A 450	IPN 360	
WF 16 X 57				IPE A 450, IPE 450	IPN 380	
WF 16 X 67		HEA 360, HEA A 400	HEB 340		IPN 400	
WF 16 X 77		HEA 360, HEA 400				
WF 16 X 89		HEA 400	HEB 360			
WF 16 X 100		HEA 400, HEA 450	HEB 400			
WF 18 X 35				IPE A 400, IPE 400		
WF 18 X 40				IPE 400, IPE A 450		
WF 18 X 46				IPE A 450, IPE 450		
WF 18 X 50				IPE 450		
WF 18 X 55				IPE 450, IPE A 500		
WF 18 X 60				IPE 450, IPE 500		
WF 18 X 65				IPE 500	IPN 400	
WF 18 X 71				IPE 500, IPE 600	IPN 450	

*** Estas equivalencias brindan apoyo al departamento comercial. No deben ser usadas sin la supervisión de un profesional competente en el diseño de estructuras metálicas.



4

4.12 EQUIVALENCIAS ENTRE PERFILES EUROPEOS (IPE, HE, IPN, HD) Y AMERICANOS (WF Y S)

EQUIVALENCIAS ENTRE PERFILES						
EQUIVALENCIAS APROXIMADAS ENTRE PERFILES						
PERFIL WF	PERFIL S	PERFIL HEA	PERFIL HEB	PERFIL IPE	PERFIL IPN	PERFIL HD
NORMA ASTM	NORMA ASTM	NORMA DIN	NORMA DIN	NORMA DIN	NORMA DIN	NORMA ASTM
WF 18 X 76		HEB 400, HEA A 450	HEB 360	IPE 550		
WF 18 X 86		HEA 450	HEB 400	IPE 600		
WF 18 X 97		HEA 450	HEB 450			
WF 18 X 106		HEA 500	HEB 450			
WF 18 X 119		HEA 500, HEA 550	HEB 500			
WF 21 X 44				IPE A 500, IPE 500		
WF 21 X 50				IPE A 500, IPE 500		
WF 21 X 57				IPE 500, IPE A 550		
WF 21 X 62				IPE 550, IPE A 550		
WF 21 X 68				IPE 550		
WF 21 X 73				IPE 550		
WF 21 X 83				IPE 550, IPE 600		
WF 21 X 93				IPE 600		
WF 21 X 101		HEA 450, HEA 500	HEB 500			
WF 21 X 111		HEA 550	HEB 500			
WF 21 X 122		HEA 550, HEA 600	HEB 550			
WF 21 X 132		HEA 600	HEB 550			
WF 21 X 147		HEA 600	HEB 550, HEB 600			
WF 24 X 68				IPE A 600, IPE 600		
WF 24 X 76				IPE 600		
WF 24 X 84				IPE 600		
WF 24 X 94				IPE 600		
WF 24 X 104		HEA 500, HEA 550	HEB 450			
WF 24 X 117		HEA 550	HEB 500			
WF 24 X 131		HEA 600	HEB 550			
WF 24 X 146			HEB 600			
WF 24 X 162			HEB 600			
WF 27 X 84				IPE 600		
WF 27 X 94				IPE 600		
WF 27 X 102				IPE 750 X 146		
WF 27 X 114				IPE 750 X 172		
WF 27 X 146		HEA 700	HEB 650			
WF 27 X 161		HEA 800	HEB 700			
WF 27 X 178		HEA 900	HEB 800			

*** Estas equivalencias brindan apoyo al departamento comercial. No deben ser usadas sin la supervisión de un profesional competente en el diseño de estructuras metálicas.



4

4.12 EQUIVALENCIAS ENTRE PERFILES EUROPEOS (IPE, HE, IPN, HD) Y AMERICANOS (WF Y S)

EQUIVALENCIAS ENTRE PERFILES						
EQUIVALENCIAS APROXIMADAS ENTRE PERFILES						
PERFIL WF	PERFIL S	PERFIL HEA	PERFIL HEB	PERFIL IPE	PERFIL IPN	PERFIL HD
NORMA ASTM	NORMA ASTM	NORMA DIN	NORMA DIN	NORMA DIN	NORMA DIN	NORMA ASTM
WF 30 X 99				IPE 750 X 146		
WF 30 X 108				IPE 750 X 160		
WF 30 X 116				IPE 750 X 173		
WF 30 X 124				IPE 750 X 183		
WF 30 X 132				IPE 750 X 195		
WF 30 X 173		HEA 800	HEB 800			
WF 30 X 191		HEA 900	HEB 900			
WF 30 X 211		HEA 1000	HEB 900			
WF 33 X 118		HEA 700		IPE 750 X 183		
WF 33 X 130		HEA 800		IPE 750 X 195		
WF 33 X 141		HEA 800				
WF 33 X 152		HEA 800				
WF 33 X 201			HEB 900			
WF 33 X 221		HEA 1000				
WF 33 X 241			HEB 1000			
WF 36 X 135		HEA A 900				
WF 36 X 150		HEA 900				
WF 36 X 160		HEA 900				
WF 36 X 170		HEA 900				
WF 36 X 182			HEB 900			
WF 36 X 194			HEB 900			
WF 36 X 210		HEA 1000				
WF 36 X 230			HEB 1000			
WF 36 X 245			HEM 1000			
WF 36 X 260		HE 900 X 396				
WF 36 X 280			HE 1000 X 415			
WF 36 X 300		HE 900 X 471				

*** Estas equivalencias brindan apoyo al departamento comercial. No deben ser usadas sin la supervisión de un profesional competente en el diseño de estructuras metálicas.



PRODUCTOS Y SERVICIOS
SERVICIOS

SERVICIOS EN LA INDUSTRIA

- Corte, dobléz y punzonado
- Recubrimientos
- Troquelado
- Biselado
- Rolado



PRODUCTOS Y SERVICIOS
CONSTRUCCIÓN

SERVICIOS DE ACABADOS EN
CONSTRUCCIÓN

- Estructuras Soldadas
- Carpintería Metálica
- Adecuaciones
- Cubiertas
- Acabados



Ingeniería



Estructuras Metálicas



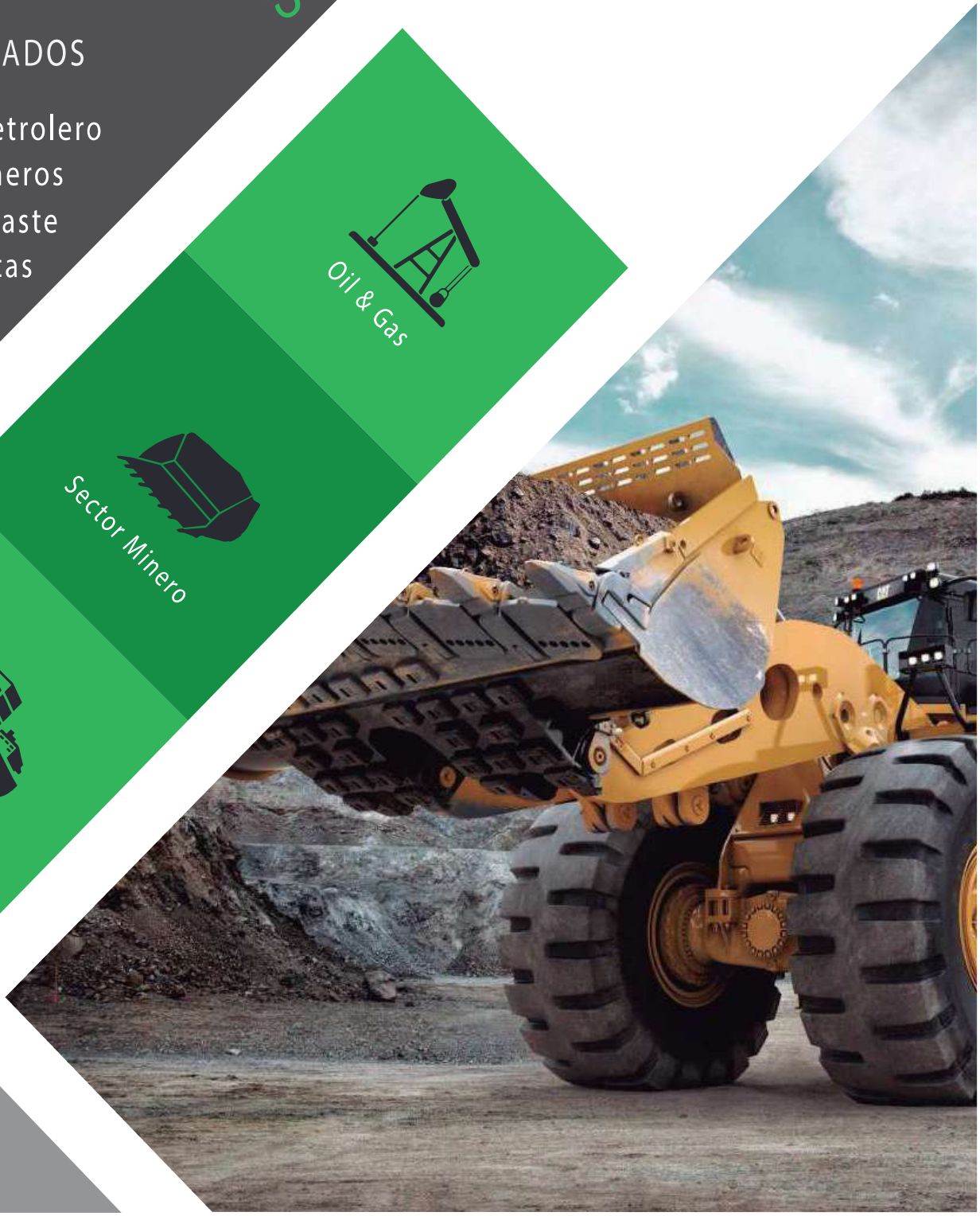
Obras Civiles



PRODUCTOS Y SERVICIOS PROYECTOS ESPECIALES

SECTORES TRABAJADOS

- Tanques Sector Petrolero
- Componentes Mineros
- Láminas Antidesgaste
- Láminas Bimetálicas
- Láminas Navales



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