



 **ACEROS
BUGAMBILIA**
UNIDOS CONSTRUYENDO SUEÑOS

CATÁLOGO

PESOS Y MEDIDAS

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CONSTRUCCIÓN



INDUSTRIA



ALAMBRE



FERRETERIA



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CONVERSIÓN DE UNIDADES

UNIDADES DE LONGITUD

ES IGUAL	mm	cm	m	km	pulgada	pie	yarda	milla
1 milímetro a	1	0.1	0.001	0.000001	0.03937	0.00328083	0.0010936	0.0000062137
1 centímetro a	10	1	0.01	0.00001	0.3937	0.0328083	0.010936	0.000062137
1 metro a	1,000	100	1	0.001	39.37	3.28083	1.0936	0.00062137
1 kilómetro a	1,000,000	100,000	1000	1	39,370	3,280.83	1,093.60	0.62137
1 pulgada a	25.4	2.54	0.0254	0.0000254	1	0.08333	0.027778	0.000016
1 pie a	304.8	30.48	0.3048	0.0003048	12	1	0.3333	0.0001894
1 yarda a	914.4	91.44	0.9144	0.0009144	36	3	1	0.0005682
1 milla a	1,609,350	160,935	1,609.35	1.60935	63,360	5,280	1,760	1

UNIDADES DE PESO

ES IGUAL	gr	kg	tm	oz
1 gramo a	1	0.001	0.000001	0.03527
1 kilogramo a	1,000	1	0.001	35.27
1 tonelada métrica a	1,000,000	1,000	1	35,270
1 onza a	28.35	0.02835	0.00002835	1
1 libra a	453.6	0.4536	0.0004536	16
1 tonelada larga a	1,016,050	1,016.05	1.01605	35,836

UNIDADES DE ÁREA

ES IGUAL	mm ²	cm ²	m ²	pulg ²	pie ²	yd ²
1 milímetro cuadrado a	1	0.01	0.000001	0.00155	0.0000108	0.0000012
1 centímetro cuadrado a	100	1	0.0001	0.155	0.00108	0.00012
1 metro cuadrado a	1,000,000	10,000	1	1,550	10.76	1.196
1 pulgada cuadrada a	645.16	6.45160	0.0006452	1	0.006944	0.000772
1 pie cuadrado a	92,903.04	929.0304	0.0929	144	1	0.11111
1 yarda cuadrada a	836,131	8,361.31	0.8361	1,296	9	1

UNIDADES DE VOLUMEN

ES IGUAL	cm ³	dm ³	m ³	pulg ³	pie ³	galón
1 centímetro cúbico a	1	0.001	0.000001	0.06102	0.00003531	0.00026417
1 decímetro cúbico a	1,000	1	0.001	61.02	0.03531	0.26417
1 metro cúbico a	1,000,000	1,000	1	61,020	35.31	264.17
1 pulgada cúbica a	16.39	0.01639	0.00001639	1	0.0005787	0.004329
1 pie cúbico a	28,316.85	28.31685	0.02831685	1,728	1	7.48055
1 galón EEUU (líquido) a	3,785.43	3.78543	0.00378543	231	0.133663	1

PESO POR UNIDAD DE LONGITUD

ES IGUAL	kg/m	lb/pie
1 kilogramo por metro a	1	0.67197
1 libra por pie a	1.48816	1

PESO POR UNIDAD DE SUPERFICIE (ESFUERZOS)

ES IGUAL	kg/cm ²	Mpa	lb/pulg ²
1 kilogramo por cm ² a	1	0.0981	14.2234
1 mega pascal a	10.1937	1	144.99
1 libra x pulg ² (ksi)	0.07031	0.0068971	1

ESPECIFICACIONES

ACEROS MÁS COMUNES

CARACTERÍSTICAS DE LOS ACEROS MÁS UTILIZADOS EN LA INDUSTRIA Y EN LA CONSTRUCCIÓN

ESPECIFICACIÓN	USOS PRINCIPALES
ACERO ESTRUCTURAL DE MEDIA Y ALTA RESISTENCIA	
ASTM A-36	Uso estructural
ASTM A-283-C	Uso estructural alta soldabilidad
ASTM A-572-50	Uso estructural alta resistencia
ASTM A-572-65	Alta resistencia, baja aleación, bases de postes y luminarias
LC PAILAS	Fabricación de pailas para galvanizado
ASTM A-709-36	Acero estructural para puentes adicionado con Cu y prueba de impacto
ASTM A-709-50	
ACERO PARA RECIPIENTES A PRESION	
ASTM A-285-C	Baja y mediana resistencia para recipientes a presión
ASTM A-516-70	Recipientes a presión a mediana y baja temperatura
ASTM A-515-70	Recipientes a presión a media y alta temperatura
ACERO PARA FABRICACIÓN DE PERFILES	
ASTM A-500-A	Norma especificada para fabricación de tubos con costura, cuadrados y redondos, para uso estructural del tipo mecánico.
ASTM A-500-B	
ASTM A-500-C	
ASTM A570-36	Media resistencia para fabricación de estructuras, perfil tubular y polines.
ASTM A-570-40	
ASTM A-570-50	
ACERO PARA FABRICACIÓN DE TUBERÍA DE CONDUCCION	
ASTM A-53-A	Tubería de baja resistencia
ASTM A-53-B	Tubería de media resistencia
API 5L -B	Tubería de conducción, media resistencia
API 5L-X 42	
ACERO BAJO, MEDIO Y ALTO CARBON (ACERO SAE)	
SAE 1006	Bajo carbono para piezas de troquelado moderado
SAE 1008	Bajo carbono para fabricación de perfil comercial, tubular y polines.
SAE 1010	
SAE 1012	
SAE 1045	Herramientas, cuchillas, concha de carretillas, palas.
SAE 1060	Implementos agrícolas

ESPECIFICACIONES

ACEROS MÁS COMUNES

ESPECIFICACIÓN	COMPOSICIÓN QUÍMICA % EN PESO MÁXIMO							LÍMITE ELÁSTICO	ÚLTIMA TENSIÓN	% ELONG.
	C	Mn	P	S	Si	Cb	V	ksi min.	ksi	8" min.
ACERO ESTRUCTURAL DE MEDIA Y ALTA RESISTENCIA										
ASTM A-36	0.29	1.20	0.040	0.050	0.4	...	...	36	58 - 80	20
ASTM A-283-C	0.24	0.90	0.035	0.040	0.4	...	...	30	55 - 75	22
ASTM A-572-50	0.23	1.35	0.035	0.035	0.4	0.050	0.06	50	65	18
ASTM A-572-65	0.23	1.65	0.035	0.040	0.4	0.050	0.15	65	80	15
LC PAILAS	0.06	0.35	0.030	0.030	0.4	...	...	...	...	...
ASTM A-709-36	0.29	1.20	0.040	0.050	0.4	...	...	36	58-80	20
ASTM A-709-50	0.23	1.35	0.035	0.035	0.4	0.050	0.06	50	65	18
ACERO PARA RECIPIENTES A PRESION										
ASTM A-285-C	0.28	0.90	0.035	0.035	...	...	...	33	55 - 75	23
ASTM A-516-70	0.31	1.20	0.035	0.035	...	...	...	38	70 - 90	17
ASTM A-515-70	0.31	1.20	0.035	0.035	...	...	...	38	70 - 90	17
ACERO PARA FABRICACION DE PERFILES										
ASTM A-500-A	0.26	...	0.035	0.035	...	...	...	39	45	25
ASTM A-500-B	0.26	...	0.035	0.035	...	...	...	46	58	23
ASTM A-500-C	0.23	1.35	0.035	0.035	...	...	...	50	62	21
ASTM A570-36	0.25	0.90	0.035	0.040	...	...	...	36	53	22
ASTM A-570-40	0.25	0.90	0.035	0.040	...	...	...	40	55	21
ASTM A-570-50	0.25	1.35	0.035	0.040	...	0.050	...	50	65	17
ACERO PARA FABRICACION DE TUBERIA DE CONDUCCION										
ASTM A-53-A	0.25	0.95	0.050	0.045	...	...	0.08	30	48	31
ASTM A-53-B	0.30	1.20	0.050	0.045	...	...	0.08	35	60	33
API 5L -B	0.26	1.15	0.030	0.030	...	...	...	35	60	*
API 5L-X 42	0.28	1.25	0.030	0.030	...	...	...	42	60	*
ACERO BAJO, MEDIO Y ALTO CARBON (ACERO SAE)										
SAE 1006	0.08	0.45	0.030	0.035	...	...	...	...	...	...
SAE 1008	0.10	0.50	0.030	0.035	...	...	...	...	...	...
SAE 1010	0.13	0.60	0.030	0.035	...	...	...	...	...	...
SAE 1012	0.15	0.60	0.030	0.035	...	...	...	...	...	...
SAE 1045	0.50	0.90	0.030	0.035	0.35	...	...	...	...	...
SAE 1060	0.66	0.90	0.030	0.035	0.35	...	...	...	...	...

TABLA DE EQUIVALENCIAS

CONVERSIONES

FRACC. DE PULGADA	DECIMALES DE PULGADA	M.M
1/64	0.015625	0.39688
1/32	0.03125	0.79375
3/64	0.046875	1.19063
1/16	0.0625	1.58751
5/64	0.078125	1.98438
3/32	0.09375	2.38126
7/64	0.109375	2.77814
1/8	0.125	3.17501
9/64	0.140625	3.57189
5/32	0.15625	3.96877
11/64	0.171875	4.36564
3/16	0.1875	4.76252
13/64	0.203125	5.15940
7/32	0.21875	5.55627
15/64	0.234375	5.95315
1/4	0.25	6.35003
17/64	0.265625	6.74690
9/32	0.28125	7.14378
19/64	0.296875	7.54065
5/16	0.3125	7.93753
21/64	0.328125	8.33441
11/32	0.34375	8.73128
23/64	0.359375	9.12816
3/8	0.375	9.52504
25/64	0.390625	9.92191
13/32	0.40625	10.31879
27/64	0.421875	10.71567
7/16	0.4375	11.11254
29/64	0.453125	11.50942
15/32	0.46875	11.90630
31/64	0.484375	12.30317
1/2	0.5	12.70005

FRACC. DE PULGADA	DECIMALES DE PULGADA	M.M
33/64	0.515625	13.09393
17/32	0.53125	13.49380
35/64	0.546875	13.89068
9/16	0.5625	14.28756
37/64	0.578125	14.68443
19/32	0.59375	15.08131
39/64	0.609375	15.47819
5/8	0.625	15.87506
41/64	0.640625	16.27194
21/32	0.65625	16.66882
43/64	0.671875	17.06569
11/16	0.6875	17.46257
45/64	0.703125	17.85945
23/32	0.71875	18.25632
47/64	0.734375	18.65320
3/4	0.75	19.0508
49/64	0.765625	19.44695
25/32	0.78125	19.8483
51/64	0.796875	20.24070
13/16	0.8125	20.63758
53/64	0.828125	21.0346
27/32	0.84375	21.43133
55/64	0.859375	21.82821
7/8	0.875	22.22509
57/64	0.890625	22.62196
29/32	0.90625	23.0184
59/64	0.921875	23.41572
15/16	0.9375	23.81259
61/64	0.953125	24.20947
31/32	0.96875	24.60635
63/64	0.984375	25.00322
1	1.0	25.40010



CORRUGADO Y COMPLEMENTOS

NOM NMX C407

VARILLA CORRUGADA ALTA RESISTENCIA

N° de varilla	Diámetro		Área	Peso	Peso por varilla	Longitud	Varillas por tonelada
	pulg.	mm	mm ²	kg/m	kg	m	piezas
2.5	5/16"	7.94	49	0.384	4.61	12.0	217 ± 7
3	3/8"	9.53	71	0.560	6.72	12.0	149 ± 4
4	1/2"	12.70	127	0.994	11.93	12.0	84 ± 2
5	5/8"	15.88	198	1.552	18.62	12.0	54 ± 1
6	3/4"	19.05	285	2.235	26.82	12.0	37 ± 1
8	1"	25.40	507	3.973	47.68	12.0	21
10	1 1/4"	31.75	794	6.225	74.70	12.0	13
12	1 1/2"	38.10	1140	8.938	107.26	12.0	9

Resistencia a la tensión (mínimo)

6,300 kg/cm²

Resistencia a la fluencia (mínimo)

4,200 kg/cm²

Alargamiento a la ruptura en 200 mm

5/16", 3/8", 1/2", 5/8" y 3/4"

9%

1"

8%

1 1/4" y 1 1/2"

7%

GRADO 42

Propiedades mecánicas de doblado

diámetro	diámetro de mandril
5/16"	3.5 d
3/8"	3.5 d
1/2"	3.5 d
5/8"	3.5 d
3/4"	5.0 d
1"	5.0 d
1 1/4"	7.0 d
1 1/2"	8.0 d

d = diámetro de la varilla

CARACTERÍSTICA	ESPECIFICACIÓN Y TOLERANCIA			
Distribución de las corrugaciones	Deben estar colocadas de manera que formen un ángulo no menor de 45° con respecto al eje de la varilla, y en direcciones encontradas en lados opuestos al eje de la varilla			
Espaciamiento, altura y costilla de las corrugaciones	N° de varilla	Espaciamiento máximo promedio en mm	Altura mínima promedio en mm	Costilla (cuerda) máxima en mm
	2,5	5,6	0,3	3,0
	3	6,7	0,4	3,6
	4	8,9	0,5	4,9
	5	11,1	0,7	6,1
	6	13,3	1,0	7,3
	8	17,8	1,3	9,7
	10	22,3	1,6	12,2
	12	26,7	1,9	14,6
Acabado	No deben ser causa de rechazo la presencia en la superficie de: escamas, irregularidades u óxido, siempre y cuando desaparezcan mediante la limpieza manual con un cepillo de alambre, y la probeta así cepillada cumpla con los requisitos dimensionales y mecánicos especificados.			

VARILLA CORRUGADA GRADO 6000

Diámetro nominal		Área	kg/m	Peso x varilla	Longitud
pulg.	mm	cm ²		(kgs)	m
3/16	4.76	0.178	0.149	0.84	6
1/4	6.35	0.317	0.248	1.49	6
5/16	7.94	0.495	0.388	2.33	6

COMPROBACIÓN DE IGUALDAD DE CARGAS

Diámetro nominal	Comparación de resistencias		
	Resistencia a la fluencia	Área de acero	Carga
1/4"	6,000 kg/cm ²	0.317 cm ²	1,902 kg
5/16"	4,200 kg/cm ²	0.495 cm ²	2,079 kg
5/16"	6,000 kg/cm ²	0.495 cm ²	2,970 kg
3/8"	4,200 kg/cm ²	0.710 cm ²	2,982 kg

ALAMBRÓN Y SUS DERIVADOS

CASTILLOS ELECTROSOLDADOS

Diseño	Varillas longitudinales corrugadas		Estribos lisos cada 15.8 cm.		Sección de concreto	Sección de castillo doblado	Tramos por hoja	Peso teórico	Fy
	diámetro (mm)	grado	diámetro (mm)	grado	(cm)	(cm)		(kg)	kg/cm2
esc-10-2	3.43	50	3.4	50	10	7.0	1	0.49	6,000
esc-12-2	3.43	50	3.4	50	12	9.0	1	0.51	6,000
esc-15-2	3.43	50	3.4	50	15	12.0	1	0.53	6,000
15-15-4	6.00	60	4.1	50	15 X 15	10.5 X 10.5	5	6.91	6,000
15-20-4	6.00	60	4.1	50	15 X 20	10.5 X 15.5	4	7.29	6,000
15-25-4	6.00	60	4.1	50	15 X 25	10.5 X 20.6	3	7.66	6,000
15-30-4	6.00	60	4.1	50	15 X 30	10.5 X 25.7	3	8.04	6,000
12-12-4	6.00	60	4.1	50	12 X 12	7.9 X 7.9	5	6.02	6,000
12-20-4	6.00	60	4.1	50	12 X 20	7.9 X 15.5	4	6.58	6,000
12-12-3	6.00	60	4.1	50	12 X 12	7.9X7.9	6	4.58	6,000
15-15-3	6.00	60	4.1	50	15 X 15	10.5 X 10.5	6	5.25	6,000
15-15-4	7.94	60	5.72	50	15 X 15	11 X 11	5	12.32	6,000
15-20-4	7.94	60	5.72	50	15 X 20	11 X 16	4	12.93	6,000
15-25-4	7.94	60	5.72	50	15 X 25	11 X 21	4	13.53	6,000
15-30-4	7.94	60	5.72	50	15 X 30	11 X 26	3	14.13	6,000
15-15-4	9.00	60	5.72	50	15 X 15	11 X 11	5	14.99	6,000
15-20-4	9.00	60	5.72	50	15 X 20	11 X 16	4	15.59	6,000
15-25-4	9.00	60	5.72	50	15 X 25	11 X 21	4	16.19	6,000
15-30-4	9.00	60	5.72	50	15 X 30	11 X 26	3	16.8	6,000

ALAMBRES GALVANIZADOS

INDUSTRIALES		FINOS		FERRETEROS		AGRÍCOLAS	
calibre	diámetros	calibre	diámetros	calibre	diámetro	calibre	diámetro
1/4 AL 16	6.35 A 1.57	18,20,22	1.22,0.84,0.71	10.5, 12.5,	3.15, 2.43,	16	1.57
tensión	peso/rollo	tensión	peso/rollo	14.5, 16	1.85, 1.57	18	1.22
3,900 - 5,200 kg/cm ²	250, 300, 600 y 1,200 kg	3,900 - 5,200 kg/cm ²	60-80 kg				

ARMADURA

CLAVO CONCRETO

Pulg.	mm
1	25
1 1/2	38
2	51
2 1/2	63
3	76
3 1/2	89
4	102
Cajas de 20 kgs aprox.	

CLAVOS

Pulg.	mm	Piezas x kilo
2	51	467
2 1/2	63	249
3	76	173
3 1/2	89	98
4	102	75
5	127	51
6	152	36
7	178	17
8	203	12
Cajas de 25 kgs. aprox.		

Diseño	Longitud m	Piezas por atado
10/36	6.0	120
12/36	2.8	120
12/36	6.0	120
12/64	2.8	120
12/64	6.0	120
14/36	3.9	120
14/36	6.0	120
14/36	7.0	120
14/36	9.0	120
14/64	6.0	120
14/64	7.0	120
15/36	6.0	120
15/36	7.0	120
15/64	6.0	120
15/64	7.0	120
21/64	8.0	120

ALAMBRÓN

Y SUS DERIVADOS

MAILLA ELECTROSOLDADA

Tipo	Diámetro del alambre mm	Área de acero cm²/m	Peso por rollo kg	Peso por hoja kg	Diámetro del rollo cm
6x6 2/2	6.67	2.29	383	57.45	85
6x6 3/3	6.19	1.97	330	49.5	83
6x6 4/4	5.72	1.69	282	42.3	80
6x6 6/6	4.88	1.23	205	30.75	70
6x6 8/8	4.11	0.87	146	21.9	65
6x6 10/10	3.43	0.61	101	-	60
6x6 12/12	2.68	0.37	62	-	50

REDONDO PULIDO SEMIFLECHA

Diámetro		Peso aproximado	
pulg.	mm	Kg/m	Kg/pza. 6
3/16"	4.75	0.143	0.858
1/4"	6.35	0.249	1.494
5/16"	7.95	0.388	2.328
3/8"	9.53	0.559	3.354
1/2"	12.70	0.994	5.964

ALAMBRÓN

Diámetro		Peso
pulg.	mm	kg/m
7/32"	5.50	0.186
1/4"	6.35	0.248
5/16"	7.94	0.388
3/8"	9.52	0.558

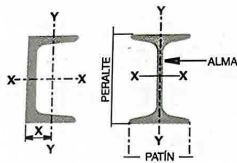
TC- Tipo Construcción
TT- Tipo Trefilar

ALAMBRE RECOCIDO

Calibre	mm	metros por kilo
16	1.65	59
14	2.11	36
12	2.77	21
10	3.41	14
8	4.19	9

ALAMBRES

Calibre número	Diámetro pulg.	Diámetro mm	Peso kg/1000 mts	Metros por kilo
3/8	0.375	9.525	558.790	1.790
5/16	0.313	7.937	388.049	2.577
1/4	0.250	6.350	248.351	4.027
0	0.340	8.636	459.350	2.177
1	0.300	7.62	357.626	2.796
2	0.284	7.214	320.496	3.120
3	0.259	6.579	266.554	3.752
4	0.238	6.045	225.082	4.443
5	0.220	5.588	192.323	5.200
6	0.203	5.156	163.753	6.107
6 1/2	0.1915	4.864	145.725	6.862
7	0.180	4.572	128.745	7.767
7 1/2	0.1725	4.382	118.239	8.457
8	0.165	4.191	108.182	9.244
8 1/2	0.1565	3.975	97.323	10.275
9	0.148	3.759	87.038	11.489
9 1/2	0.141	3.581	79.000	12.658
10	0.134	3.404	71.350	14.015
10 1/2	0.127	3.226	64.091	15.602
11	0.120	3.048	57.220	17.476
11 1/2	0.1145	2.908	52.095	19.195
12	0.109	2.769	47.211	21.181
12 1/2	0.102	2.591	41.342	24.188
13	0.095	2.413	35.862	27.884
13 1/2	0.089	2.26	31.475	31.771
14	0.083	2.108	27.374	36.531
14 1/2	0.0775	1.969	23.867	41.898
15	0.072	1.829	20.599	48.546
15 1/2	0.0685	1.74	18.645	53.634
16	0.065	1.651	16.789	59.563
16 1/2	0.0615	1.562	15.029	66.538
17	0.058	1.473	13.367	74.811
17 1/2	0.0535	1.359	11.373	87.928
18	0.049	1.245	9.541	104.810
18 1/2	0.0455	1.156	8.226	121.566
19	0.042	1.067	7.009	142.674
19 1/2	0.0385	0.978	5.890	169.779
20	0.035	0.889	4.868	205.423
21	0.032	0.813	4.069	245.761
22	0.028	0.711	3.115	321.027



CANAL (CPS)

Y VIGA (IPS)

CANALES CPS PROPIEDADES DE DISEÑO Y DIMENSIONES

PERALTE	PATÍN	PESO		ÁREA	ESPESORES		EJE X - X			EJE Y - Y			DISTANCIA
		kg/m	kg/pza.		ALMA	PATÍN	S	I	r	S	I	r	
Pulg.	mm	mm		cm ²	mm	mm	cm ³	cm ⁴	cm	cm ³	cm ⁴	cm	X
													cm
3" L	76.20	35.81	5.21	63.56	6.68	3.17	6.45	16.31	62.27	3.06	2.87	7.03	1.03
3"	76.20	35.81	6.10	74.42	7.68	4.32	6.93	17.90	68.10	2.97	3.40	8.30	1.04
4" L	101.60	40.23	6.70	81.74	8.54	4.42	5.59	25.20	128.12	3.89	2.98	9.53	1.06
4"	101.60	40.23	8.04	98.08	10.00	4.67	7.52	31.10	157.90	3.97	4.70	13.30	1.15
6" L	152.20	48.77	12.20	148.84	15.35	5.08	8.71	71.00	541.00	5.94	8.20	29.10	1.38
6" SP	152.20	51.66	15.62	190.56	19.81	7.98	8.71	82.50	628.50	5.64	9.34	36.21	1.35
6" P	152.20	54.79	19.34	235.94	24.71	11.10	8.71	95.00	724.20	5.41	10.52	43.70	1.33
8" L	203.20	57.40	17.11	208.74	21.81	5.60	9.91	133.40	1356.90	7.90	12.80	54.94	1.59
8" SP	203.20	59.51	20.46	249.61	26.06	7.70	9.91	148.00	1502.60	7.59	13.99	63.68	1.56
8" P	203.20	64.19	27.90	340.38	35.55	12.37	9.91	180.30	1831.40	7.16	16.55	82.41	1.52
10"	254.00	66.04	22.80	278.16	28.97	6.10	11.07	221.20	2805.40	9.83	19.01	94.90	1.81
10" SP	254.00	69.57	29.80	363.56	37.94	9.63	11.07	258.90	3284.10	9.30	21.63	116.96	1.76
10" P	254.00	73.30	37.20	453.84	47.42	13.36	11.07	298.20	3796.00	8.94	24.25	139.85	1.72
10" SP	254.00	77.04	44.70	545.34	56.90	17.09	11.07	339.20	4287.20	8.69	27.04	164.00	1.70
12"	304.80	74.73	30.80	375.76	39.29	7.16	12.72	352.30	5369.40	11.71	28.35	161.50	2.03
12" SP	304.80	77.39	37.20	453.84	47.42	9.83	12.72	394.90	5993.70	11.25	30.81	186.06	1.98
12" P	304.80	80.52	44.70	545.34	56.90	12.95	12.72	442.50	6742.90	10.90	33.76	213.94	1.94

PROPIEDADES Y MEDIDAS VIGA IPS

PERALTE	PESO	ÁREA	PATÍN		ALMA	EJE X - X			EJE Y - Y		
			Ancho	Espeor		I	S	r	I	S	r
Pulg.	mm.	kg/m	mm	mm	mm	cm ⁴	cm ³	cm	cm ⁴	cm ³	cm
3	76.20	8.48	10.52	59.00	6.60	103.3	27.10	3.12	19.10	6.50	1.35
4	101.60	11.46	14.26	67.64	7.44	248.3	48.90	4.17	32.10	9.50	1.50
5	127.00	14.88	18.52	76.30	8.28	503.3	79.30	5.21	51.20	13.40	1.65
6	152.40	18.60	23.29	84.63	9.12	906.8	119.00	6.25	77.00	18.20	1.83
8	203.20	27.38	34.90	101.62	10.82	2,397.5	235.97	8.28	155.25	30.48	2.11

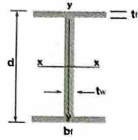
TABLA DE ESPECIFICACIÓN DE VIGAS PARA CLAROS DETERMINADOS

CLARO	USO ENTREPISO			USO AZOTEA		
	Separación entre vigas (mts)					
	mts.	0.90	1.00	1.10	0.90	1.00
2.50	4"	4"	4"	4"	4"	4"
3.00	4"	4"	4"	4"	4"	4"
3.20	4"	4"	5"	4"	4"	4"
3.40	4"	5"	5"	4"	4"	4"
3.50	5"	5"	5"	4"	4"	5"
3.60	5"	5"	5"	4"	4"	5"
3.80	5"	5"	5"	4"	5"	5"
4.00	5"	5"	5"	5"	5"	5"
4.20	5"	5"	5"	5"	5"	5"
4.40	5"	6"	6"	5"	5"	5"
4.50	6"	6"	6"	5"	5"	6"
4.60	6"	6"	6"	5"	5"	6"
4.80	6"	6"	6"	6"	6"	6"
5.00	6"	6"	8" L	6"	6"	6"
5.20	6"	8" L	8" L	6"	8" L	8" L
5.40	8" SP	8" SP	8"	8" L	8" L	8" SP
5.60	8" SP	8"	8"	8" L	8" SP	8" SP
5.80	8"	8"	8"	8"	8"	8"
6.00	8"	8"	8"	8"	8"	8"

DATOS PARA EL CÁLCULO DE VIGUERÍA PARA BÓVEDA DE LADRILLO

USO	CARGA MUERTA	CARGA VIVA	Fy
	kg/m ²	kg/m ²	
Entrepiso	300	250	2,530
Azotea	300	150	

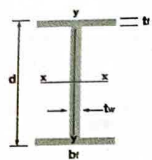
* Las vigas se consideran simplemente apoyadas y lateralmente soportadas.



IPR

PERFIL I RECTANGULAR

Descripción	lb/pie	kg/m	Área cm ²	Peralte (d) mm	Espesor del alma (tw) mm	Patín		Eje X - X			Eje Y - Y		
						ancho (bf) mm	espesor (tf) mm	I cm ⁴	S cm ³	r cm	I cm ⁴	S cm ³	r cm
6" x 4"	9	13.4	17.29	150	4.32	100	5.5	683	91	6.3	91	18	2.3
	12	17.9	22.90	153	5.84	102	7.1	920	120	6.3	124	25	2.3
	16	23.8	30.58	160	6.60	102	10.3	1336	167	6.6	184	36	2.5
6" x 6"	15	22.3	28.58	152	5.84	152	6.6	1220	160	6.6	388	51	3.7
	20	29.8	37.87	157	6.60	153	9.3	1727	220	6.8	554	72	3.8
	25	37.2	47.35	162	8.13	154	11.6	2231	275	6.9	712	92	3.9
8" x 4"	10	14.9	19.10	200	4.32	100	5.2	1282	128	8.2	87	17	2.1
	13	19.3	24.77	203	5.84	102	6.5	1648	162	8.2	114	22	2.1
	15	22.3	28.65	206	6.22	102	8.0	1998	193	8.4	142	28	2.2
8" x 5 1/4"	18	26.8	33.94	207	5.84	133	8.4	2576	249	8.7	332	50	3.1
	21	31.3	39.74	210	6.35	134	10.2	3134	298	8.9	407	61	3.2
	24	35.7	45.68	201	6.22	165	10.2	3442	342	8.7	762	92	4.1
8" x 6 1/2"	28	41.7	53.23	205	7.24	166	11.8	4079	398	8.8	903	109	4.1
	31	46.1	58.90	203	7.24	203	11.0	4579	451	8.8	1544	152	5.1
	35	52.1	66.45	206	7.87	204	12.6	5286	511	8.9	1773	174	5.2
8" x 8"	40	59.5	75.48	210	9.14	205	14.2	6077	582	9.0	2044	200	5.2
	48	71.4	90.97	216	10.16	206	17.4	7659	708	9.2	2535	246	5.3
	58	86.3	110.32	222	12.95	209	20.6	9490	852	9.3	3126	300	5.3
10" x 4"	67	99.7	127.10	229	14.48	210	23.7	11321	990	9.4	3688	351	5.4
	12	17.9	22.84	251	4.83	101	5.3	2239	179	9.9	91	18	2.0
	15	22.3	28.45	254	5.84	102	6.9	2868	226	10.0	120	24	2.1
10" x 5 3/4"	17	25.3	32.19	257	6.10	102	8.4	3409	265	10.3	148	29	2.1
	19	28.3	36.26	260	6.35	102	10.0	4008	308	10.5	179	35	2.2
	22	32.7	41.87	258	6.10	146	9.1	4912	380	10.8	475	65	3.4
10" x 8"	26	38.7	49.10	262	6.60	147	11.2	5994	457	11.0	587	80	3.5
	30	44.6	57.03	266	7.62	148	13.0	7076	531	11.1	695	94	3.5
	33	49.1	62.65	247	7.37	202	11.0	7118	574	10.6	1523	151	4.9
10" x 10"	39	58.0	74.19	252	8.00	203	13.5	8699	690	10.8	1873	185	5.0
	45	67.0	85.81	257	8.89	204	15.7	10323	805	11.0	2223	218	5.1
	49	72.9	92.90	253	8.64	254	14.2	11321	895	11.0	3888	306	6.5
12" x 4"	54	80.4	97.29	256	9.40	255	15.6	12612	983	11.1	4287	338	6.5
	60	89.3	113.55	260	10.67	256	17.3	14193	1093	11.2	4828	377	6.5
	68	101.2	129.03	264	11.94	257	19.6	16400	1241	11.3	5578	433	6.6
12" x 6 1/2"	77	114.6	145.81	269	13.46	259	22.1	18939	1408	11.4	6410	493	6.6
	88	131.0	167.10	275	15.37	261	25.1	22227	1614	11.5	7451	570	6.7
	100	148.8	189.68	282	17.27	263	28.4	25931	1835	11.7	8616	655	6.7
12" x 8"	112	166.7	212.26	289	19.18	265	31.8	29802	2065	11.8	9823	742	6.8
	14	20.8	26.84	303	5.08	101	5.7	3688	243	11.7	98	20	1.9
	16	23.8	30.39	305	5.59	101	6.7	4287	280	11.9	117	23	2.0
12" x 10"	19	28.3	35.94	309	5.97	102	8.9	5411	349	12.2	157	31	2.1
	22	32.7	41.81	313	6.60	102	10.8	6493	416	12.5	194	38	2.2
	26	38.7	49.35	310	5.84	165	9.7	8491	547	13.1	720	88	3.8
12" x 12"	30	44.6	56.71	313	6.60	166	11.2	9906	633	13.2	845	102	3.9
	35	52.1	66.45	318	7.62	167	13.2	11863	747	13.3	1020	122	3.9
	40	59.5	76.13	303	7.49	203	13.1	12778	844	13.0	1836	180	4.9
12" x 14"	45	67.0	85.16	306	8.51	204	14.6	14485	946	13.1	2081	203	5.0
	50	74.4	94.84	310	9.40	205	16.3	16275	1052	13.2	2343	228	5.0
	53	78.9	100.64	306	8.76	254	14.6	17690	1157	13.3	3987	315	6.3
12" x 10"	58	86.3	109.68	310	9.14	254	16.3	19771	1278	13.4	4454	351	6.4

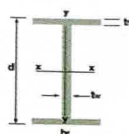


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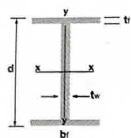
PERFIL I RECTANGULAR (IR)

Descripción	lb/pie	kg/m	Área cm ²	Peralte (d) mm	Espesor del alma (tw) mm	Patín		Eje X - X			Eje Y - Y		
						ancho (bf) mm	espesor (tf) mm	I cm ⁴	S cm ³	r cm	I cm ⁴	S cm ³	r cm
12" x 12"	65	96.7	123.23	308	9.91	305	15.4	22185	1440	13.4	7242	477	7.7
	72	107.1	136.13	311	10.92	306	17.0	24849	1596	13.5	8117	531	7.7
	79	117.6	149.68	314	11.94	307	18.7	27555	1753	13.6	8991	587	7.7
	87	129.5	165.16	318	13.08	308	20.6	30801	1934	13.7	10031	651	7.8
	96	142.9	181.94	323	13.97	309	22.9	34672	2147	13.8	11238	728	7.8
	106	157.7	201.29	327	15.49	310	25.1	38834	2376	13.9	12529	808	7.9
	120	178.6	227.74	333	18.03	313	28.1	44537	2671	14.0	14360	918	8.0
	136	202.4	257.42	341	20.07	315	31.8	51613	3048	14.2	16566	1052	8.0
12" x 12 1/2"	152	226.2	288.39	348	22.10	317	35.6	59521	3425	14.4	18897	1193	8.1
	170	253.0	322.58	356	24.38	319	39.6	68678	3851	14.6	21519	1349	8.2
	190	282.8	360.00	365	26.92	322	44.1	78668	4310	14.8	24516	1524	8.3
	210	312.5	398.71	374	29.97	325	48.3	89074	4785	15.0	27638	1704	8.3
	230	342.3	436.77	382	32.64	328	52.6	100728	5260	15.2	30884	1885	8.4
	252	375.0	478.06	391	35.43	330	57.2	113215	5785	15.4	34464	2081	8.5
	279	415.2	528.39	403	38.86	334	62.7	129448	6440	15.6	39001	2343	8.6
	305	453.9	578.06	415	41.28	336	68.7	147762	7128	16.0	43704	2606	8.7
14" x 5"	336	500.0	637.42	427	45.09	340	75.1	168990	7915	16.3	49532	2901	8.8
	22	32.7	41.87	349	5.84	127	8.5	8283	475	14.1	291	46	2.6
14" x 6 3/4"	26	38.7	49.61	353	6.48	128	10.7	10198	578	14.4	371	58	2.7
	30	44.6	57.10	352	6.86	171	9.8	12112	688	14.6	816	95	3.8
14" x 8"	34	50.6	64.52	355	7.24	171	11.6	14152	796	14.8	970	113	3.9
	38	56.6	72.26	358	7.87	172	13.1	16025	895	14.9	1111	129	3.9
14" x 10"	43	64.0	81.29	347	7.75	203	13.5	17815	1026	14.8	1881	185	4.8
	48	71.4	90.97	350	8.64	204	15.1	20146	1150	14.9	2139	210	4.9
	53	78.9	100.64	354	9.40	205	16.8	22518	1275	15.0	2402	234	4.9
14" x 14 1/2"	61	90.8	115.48	353	9.53	254	16.4	26639	1509	15.2	4454	352	6.2
	68	101.2	129.03	357	10.54	255	18.3	30052	1688	15.3	5036	397	6.2
	74	110.1	140.64	360	11.43	256	19.9	33090	1835	15.3	5578	436	6.3
	82	122.0	155.48	363	12.95	257	21.7	36670	2016	15.4	6160	480	6.3
14" x 16"	90	133.9	170.97	356	11.18	369	18.0	41582	2343	15.6	15068	818	9.4
	99	147.3	187.74	360	12.32	370	19.8	46202	2573	15.7	16733	905	9.4
	109	162.2	206.45	364	13.34	371	21.8	51613	2835	15.8	18606	1003	9.5
	120	178.6	227.74	368	14.99	373	23.9	57440	3114	15.8	20603	1106	9.5
	132	196.4	250.32	372	16.38	374	26.2	63683	3425	16.0	22809	1221	9.6
16" x 5 1/2"	145	215.8	275.48	375	17.27	394	27.7	71176	3802	16.1	28179	1431	10.1
	159	236.6	301.29	380	18.92	395	30.2	79084	4162	16.2	31134	1576	10.2
	176	261.9	334.19	387	21.08	398	33.3	89074	4605	16.3	34880	1753	10.2
	193	287.2	366.45	393	22.61	399	36.6	99896	5080	16.5	38751	1950	10.3
	211	314.0	400.00	399	24.89	401	39.6	110718	5539	16.6	42872	2130	10.3
	233	346.7	441.93	407	27.18	404	43.7	125286	6145	16.8	47867	2376	10.4
	257	382.5	487.74	416	29.85	406	48.0	141519	6801	17.0	53694	2638	10.5
	283	421.1	537.42	425	32.77	409	52.6	159833	7522	17.2	59937	2933	10.6
	311	462.8	589.68	435	35.81	412	57.4	180228	8292	17.5	67013	3261	10.7
	342	509.0	651.61	446	39.12	416	62.7	203953	9144	17.7	75338	3622	10.8
	370	550.6	703.22	455	42.04	418	67.6	226430	9947	18.0	82830	3949	10.8
	398	592.3	754.84	465	44.96	421	72.3	249739	10750	18.2	90322	4293	10.9
16" x 7"	426	634.0	806.45	474	47.63	424	77.1	274713	11569	18.4	98231	4638	11.0
	26	38.7	49.55	399	6.35	140	8.8	12529	629	15.9	399	57	2.8
	31	46.1	58.84	403	6.99	140	11.2	15609	773	16.3	516	74	3.0
	36	53.6	68.39	403	7.49	177	10.9	18647	926	16.5	1020	115	3.9
	40	59.5	76.13	407	7.75	178	12.8	21561	1060	16.8	1203	135	4.0
	45	67.0	85.81	410	8.76	179	14.4	24391	1191	16.9	1365	153	4.0
	50	74.4	94.84	413	9.65	180	16.0	27430	1327	17.0	1548	172	4.0
	57	84.8	108.39	417	10.92	181	18.2	31550	1511	17.1	1794	198	4.1

PERFIL I RECTANGULAR (IR)



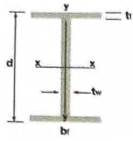
Descripción	lb/pie	kg/m	Área cm ²	Peralte (d) mm	Espesor del alma (t _w) mm	Patín		Eje X - X			Eje Y - Y		
						ancho (b) mm	espesor (t _f) mm	l cm ⁴	S cm ³	r cm	l cm ⁴	S cm ³	r cm
16" x 10 1/4"	67	99.7	127.10	415	10.03	260	16.9	40374	1950	17.7	4953	380	6.2
	77	114.6	145.81	420	11.56	261	19.3	46618	2229	17.8	5744	441	6.2
	89	132.4	169.03	425	13.34	263	22.2	54526	2573	17.9	6785	515	6.3
	100	148.8	189.68	431	14.86	265	25.0	62435	2901	18.0	7742	585	6.4
18" x 6"	35	52.1	66.45	450	7.62	152	10.8	21228	944	17.9	637	84	3.1
	40	59.5	76.13	455	8.00	153	13.3	25473	1121	18.3	795	104	3.2
	46	68.5	87.10	459	9.14	154	15.4	29636	1291	18.4	937	122	3.3
18" x 7 1/2"	50	74.4	94.84	457	9.02	190	14.5	33299	1457	18.7	1669	175	4.2
	55	81.8	104.52	460	9.91	191	16.0	37045	1611	18.8	1869	195	4.2
	60	89.3	113.55	463	10.54	192	17.7	40957	1770	19.0	2085	218	4.3
	65	96.7	123.23	466	11.43	193	19.1	44537	1917	19.0	2281	236	4.3
	71	105.7	134.19	469	12.57	194	20.6	48699	2081	19.1	2510	259	4.3
	76	113.1	143.87	463	10.80	280	17.3	55359	2393	19.6	6327	452	6.6
18" x 11"	86	128.0	163.23	467	12.19	282	19.6	63683	2720	19.7	7284	518	6.7
	97	144.4	183.87	472	13.59	283	22.1	72840	3081	19.9	8366	592	6.7
	106	157.7	200.64	476	14.99	284	23.9	79500	3343	19.9	9157	646	6.8
	119	177.1	226.45	482	16.64	286	26.9	91155	3785	20.1	10531	736	6.8
	130	193.5	246.45	489	17.02	283	30.5	102393	4195	20.4	11571	818	6.9
	143	212.8	271.61	495	18.54	285	33.5	114464	4621	20.5	12945	909	6.9
	158	235.1	298.71	501	20.57	287	36.6	127367	5080	20.6	14443	1006	7.0
	175	260.4	330.97	509	22.61	289	40.4	143600	5637	20.8	16275	1127	7.0
	192	285.7	363.87	517	24.38	291	44.5	161914	6260	21.1	18314	1259	7.1
	211	314.0	400.64	525	26.92	293	48.5	181061	6899	21.3	20520	1398	7.2
	234	348.2	443.87	535	29.46	296	53.6	204786	7669	21.5	23226	1572	7.2
	258	383.9	489.68	545	32.51	299	58.4	230176	8456	21.7	26139	1753	7.3
21" x 6 1/2"	283	421.1	536.77	555	35.56	302	63.5	257231	9275	21.9	29344	1950	7.4
	311	462.8	590.32	567	38.61	305	69.6	290530	10258	22.2	33090	2179	7.5
	44	65.5	83.87	525	8.89	165	11.4	35088	1337	20.5	862	104	3.2
	50	74.4	94.84	529	9.65	166	13.6	40957	1549	20.8	1036	125	3.3
21" x 8 1/4"	57	84.8	107.74	535	10.29	166	16.5	48699	1819	21.2	1274	153	3.4
	62	92.3	118.06	533	10.16	209	15.6	55359	2081	21.7	2393	229	4.5
	68	101.2	129.03	537	10.92	210	17.4	61602	2294	21.8	2693	257	4.6
	73	108.6	138.71	539	11.56	211	18.8	66597	2474	21.9	2939	279	4.6
	83	123.5	156.77	544	13.08	212	21.2	76170	2802	22.0	3388	320	4.6
	93	138.4	176.13	549	14.73	214	23.6	86160	3146	22.1	3867	362	4.7
21" x 12 1/4"	101	150.3	192.26	543	12.70	312	20.3	100728	3720	22.9	10323	660	7.3
	111	165.2	210.97	546	13.97	313	22.2	111134	4080	23.0	11405	729	7.4
	122	181.6	231.61	551	15.24	315	24.4	123204	4474	23.1	12695	806	7.4
	132	196.4	250.32	554	16.51	316	26.3	134027	4834	23.2	13861	877	7.4
	147	218.8	278.71	560	18.29	318	29.2	151092	5391	23.3	15650	985	7.5
	166	247.0	315.48	571	19.05	315	34.5	178147	6227	23.8	18106	1147	7.6
	182	270.8	346.45	577	21.08	318	37.6	196877	6833	23.9	20104	1265	7.6
	201	299.1	381.93	585	23.11	319	41.4	221019	7554	24.1	22560	1411	7.7
	223	331.9	421.93	593	25.40	322	45.5	247658	8357	24.2	25348	1575	7.7
	248	369.1	469.68	603	27.94	324	50.5	281372	9324	24.5	28886	1786	7.8
24" x 7"	275	409.2	516.64	617	30.99	327	55.6	317168	10357	24.7	32674	1999	7.9
	55	81.8	104.52	599	10.03	178	12.8	56607	1885	23.2	1211	136	3.4
24" x 9"	62	92.3	117.42	603	10.92	179	15.0	64932	2163	23.5	1436	161	3.5
	68	101.2	129.68	603	10.54	228	14.9	76170	2524	24.3	2930	257	4.7
	76	113.1	144.52	608	11.18	228	17.3	87409	2884	24.6	3434	302	4.9
	84	125.0	159.35	612	11.94	229	19.6	98647	3212	24.9	3929	342	5.0
	94	139.9	178.71	617	13.08	230	22.2	112382	3638	25.1	4537	393	5.0
	103	153.3	195.48	623	13.97	229	24.9	124869	4015	25.3	4953	434	5.1



IPR

PERFIL I RECTANGULAR (IR)

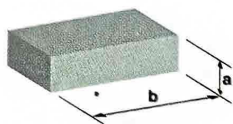
Descripción	lb/pie	kg/m	Área cm ²	Peralte (d) mm	Espesor del alma (tw) mm	Patín		Eje X - X			Eje Y - Y		
						ancho (bf)	espesor (tf)	I	S	r	I	S	r
						mm	mm	cm ⁴	cm ³	cm	cm ⁴	cm ³	cm
24" x 12 3/4"	104	154.8	197.42	611	12.70	324	19.1	129032	4228	26.2	10822	667	7.4
	117	174.1	221.94	616	13.97	325	21.6	147346	4769	25.7	12404	762	7.5
	131	194.9	248.39	622	15.37	327	24.4	167325	5391	25.9	14193	869	7.5
	146	217.3	277.42	628	16.51	328	27.7	190634	6080	26.2	16275	991	7.7
	162	241.1	307.74	635	17.91	329	31.0	215192	6784	26.7	18439	1121	7.7
	176	261.9	333.55	641	19.05	327	34.0	236419	7374	26.9	19979	1218	7.7
	192	285.7	363.23	647	20.57	329	37.1	260561	8046	26.7	22060	1342	7.8
	207	308.0	391.61	653	22.10	330	39.9	283870	8702	27.2	24058	1457	7.8
	229	340.8	433.55	661	24.38	333	43.9	318417	9636	27.2	27097	1631	7.9
	250	372.0	474.19	669	26.42	335	48.0	353380	10553	27.2	30177	1803	8.0
	279	415.2	529.03	679	29.46	338	53.1	399582	11766	27.7	34256	2032	8.1
	306	455.4	579.35	689	32.00	340	57.9	449530	12929	27.9	38293	2245	8.1
27" x 10"	335	498.5	634.84	699	35.05	343	63.0	499478	14158	27.9	42872	2491	8.2
	370	550.6	696.77	711	38.61	347	69.1	561912	15682	28.4	48283	2786	8.3
	84	125.0	160.00	678	11.68	253	16.3	118626	3490	27.2	4412	349	5.3
	94	139.9	178.71	684	12.45	254	18.9	136108	3982	28.2	5161	406	5.4
	102	151.8	193.55	688	13.08	254	21.1	150676	4375	28.4	5827	457	5.5
27" x 14"	114	169.7	216.13	693	14.48	256	23.6	169822	4900	27.9	6618	518	5.5
	129	192.0	243.87	702	15.49	254	27.9	198126	5654	28.4	7700	603	5.6
	146	217.3	276.77	695	15.37	355	24.8	239749	6899	29.5	18439	1041	8.1
	161	239.6	305.81	701	16.76	356	27.4	266804	7620	29.5	20687	1162	8.2
	178	264.9	337.42	706	18.42	358	30.2	296357	8390	29.7	23142	1293	8.3
	194	288.7	367.74	714	19.05	356	34.0	331320	9275	30.0	25765	1445	8.4
	217	322.9	411.61	722	21.08	359	38.1	375024	10389	30.2	29344	1635	8.4
	235	349.7	445.81	728	23.11	360	40.9	407907	11209	30.2	32008	1770	8.5
	258	383.9	488.39	736	24.89	362	45.0	453692	12323	30.5	35796	1983	8.5
	307	456.9	581.93	752	29.46	367	53.1	549425	14650	30.5	43704	2393	8.7
30" x 10 1/2"	336	500.0	636.77	762	32.00	370	57.9	611860	16043	30.7	49115	2655	8.8
	368	547.6	697.42	772	35.05	372	63.0	678457	17534	31.2	54526	2933	8.8
	90	133.9	170.32	750	11.94	264	15.5	150260	4015	29.7	4787	362	5.3
	99	147.3	187.74	753	13.21	265	17.0	166076	4408	29.7	5328	401	5.3
	108	160.7	204.52	758	13.84	266	19.3	186055	4900	30.7	6077	457	5.5
	116	172.6	220.64	762	14.35	267	21.6	205202	5391	30.5	6868	515	5.6
	124	184.5	235.48	766	14.86	267	23.6	223100	5817	30.7	7534	564	5.7
	132	196.4	250.97	770	15.62	268	25.4	240166	6227	31.2	8158	611	5.7
	148	220.2	280.64	779	16.51	266	30.0	278043	7145	31.8	9448	710	5.8
	173	257.5	327.74	773	16.64	381	27.1	347969	8996	32.5	24891	1309	8.7
30" x 15"	191	284.2	361.93	779	18.03	382	30.1	388344	9963	32.8	28012	1467	8.8
	211	314.0	400.00	786	19.69	384	33.4	432881	11028	33.0	31384	1639	8.9
	235	349.7	445.16	795	21.08	382	38.1	491153	12389	33.3	35588	1868	9.0
	261	388.4	494.84	803	23.62	385	41.9	549425	13716	33.3	39958	2081	9.1
	292	434.5	552.90	813	25.91	387	47.0	624347	15371	33.5	45785	2360	9.1
	326	485.1	617.42	823	28.96	390	52.1	703431	17043	33.8	51613	2655	9.1
	357	531.3	676.13	833	31.50	393	56.9	782515	18845	34.0	57856	2933	9.2
	391	581.9	741.93	843	34.54	396	62.0	865761	20484	34.3	64516	3261	9.3
	118	175.6	223.87	835	13.97	292	18.8	245577	5883	33.0	7784	536	5.9
	130	193.5	247.10	840	14.73	292	21.7	279291	6653	33.5	9074	621	6.1
33" x 11 1/2"	141	209.8	268.39	846	15.37	293	24.4	310092	7341	34.3	10281	701	6.2
	152	226.2	288.39	851	16.13	294	26.8	339645	7981	34.8	11363	773	6.3
	169	251.5	319.35	859	17.02	292	31.0	386679	8996	35.1	12945	885	6.4



IPR

PERFIL I RECTANGULAR (IR)

Descripción	lb/pie	kg/m	Área cm ²	Peralte (d) mm	Espesor del alma (tw) mm	Patín		Eje X - X			Eje Y - Y		
						ancho (bf) mm	espesor (tf) mm	I cm ⁴	S cm ³	r cm	I cm ⁴	S cm ³	r cm
33" x 15 3/4"	201	299.1	381.29	855	18.16	400	29.2	486991	11389	35.8	31217	1560	9.0
	221	328.9	419.35	862	19.69	401	32.4	541101	12585	36.1	35005	1737	9.1
	241	358.6	457.42	868	21.08	403	35.6	599373	13765	35.8	38834	1934	9.2
	263	391.4	499.35	877	22.10	401	39.9	665970	15207	36.6	43288	2147	9.3
	291	433.1	552.26	885	24.38	404	43.9	745054	16715	36.6	48283	2393	9.3
	318	473.2	603.22	893	26.42	406	48.0	819976	18354	36.8	53694	2638	9.4
	354	526.8	671.61	903	29.46	409	53.1	919871	20320	37.1	60770	2966	9.5
36" x 12"	387	575.9	735.48	913	32.00	411	57.9	1019767	22286	37.3	67429	3277	9.6
	135	200.9	256.13	903	15.24	304	20.1	324660	7194	35.6	9365	618	6.0
	150	223.2	285.16	911	15.88	304	23.9	376273	8259	36.3	11238	739	6.3
	160	238.1	303.23	915	16.51	305	25.9	406242	8882	36.6	12279	805	6.4
	170	253.0	322.58	919	17.27	306	27.9	437043	9521	36.8	13319	872	6.4
	182	270.8	345.81	923	18.42	307	30.0	470341	10209	36.8	14443	944	6.5
	194	288.7	367.74	927	19.43	308	32.0	503640	10881	37.1	15609	1014	6.5
36" x 16 1/2"	210	312.5	398.71	932	21.08	309	34.5	549425	11782	37.1	17107	1106	6.6
	232	345.3	439.35	943	22.10	308	39.9	624347	13257	37.6	19480	1265	6.7
	256	381.0	486.45	951	24.38	310	43.9	699269	14666	37.8	21977	1417	6.7
	231	343.8	441.93	927	19.30	418	32.0	653483	14093	38.4	39126	1868	9.4
	247	367.6	470.32	931	20.32	419	34.3	703431	15076	38.6	42039	2016	9.5
	262	389.9	499.35	936	21.34	420	36.6	749217	16059	38.9	45369	2163	9.5
	282	419.7	538.06	943	22.48	422	39.9	819976	17370	39.1	49948	2360	9.6
40" x 12"	302	449.4	576.13	948	24.00	423	42.7	882411	18681	39.1	54110	2556	9.7
	330	491.1	628.39	957	25.91	422	47.0	973981	20320	39.4	59105	2802	9.7
	361	537.2	687.10	965	28.45	425	51.1	1073877	22286	39.6	65348	3081	9.8
	395	587.8	757.42	976	30.99	427	55.9	1190422	24417	39.6	72840	3409	9.8
	441	656.3	840.00	987	34.54	431	62.0	1344427	27203	39.4	82830	3851	9.9
	149	221.7	282.58	970	16.00	300	21.1	407907	8407	38.1	9532	636	5.8
	167	248.5	316.77	980	16.51	300	26.0	482828	9832	38.9	11863	785	6.1
40" x 16"	183	272.3	346.45	990	16.51	300	30.5	553588	11192	39.9	13985	932	6.4
	211	314.0	400.00	1000	19.05	300	35.9	645159	12880	40.1	16233	1083	6.4
	235	349.7	444.52	1008	21.08	302	40.0	724243	14339	40.4	18481	1222	6.5
	264	392.9	500.64	1016	24.38	303	43.9	807489	15912	40.1	20520	1354	6.4
	294	437.5	556.13	1026	26.92	305	49.0	911547	17698	40.4	23392	1532	6.5
	327	486.6	618.71	1036	29.97	308	54.1	1019767	19664	40.6	26639	1721	6.6
	199	296.1	376.77	982	16.51	400	27.1	620185	12618	40.6	28928	1445	8.8
40" x 16"	215	320.0	408.39	990	16.51	400	31.0	695106	14076	41.1	33132	1655	9.0
	249	370.6	472.90	1000	19.05	400	36.1	815814	16272	41.4	38543	1934	9.0
	277	412.2	524.52	1008	21.08	402	40.0	911547	18026	41.7	43288	2163	9.1
	297	442.0	563.87	1012	23.62	402	41.9	965657	19173	41.4	45369	2261	9.0
	324	482.2	614.84	1020	25.40	404	46.0	1065552	20975	41.7	50780	2507	9.1
	362	538.7	690.32	1030	28.45	407	51.1	1202909	23270	41.9	57440	2835	9.1
	372	553.6	705.81	1032	29.46	408	51.9	1232045	23925	41.9	59105	2901	9.1
44" x 16"	397	590.8	754.84	1040	30.99	409	55.9	1331940	25564	42.2	64100	3130	9.2
	431	641.4	817.42	1048	34.04	412	59.9	1448485	27694	42.2	70343	3409	9.3
	230	342.3	438.06	1090	18.03	400	31.0	878248	16059	41.9	33299	1655	9.1
	262	389.9	498.06	1100	19.94	400	35.9	1015605	18517	41.9	38293	1917	8.8
	290	431.6	553.55	1108	21.97	402	40.0	1136312	20484	42.2	43288	2163	9.2
	335	498.5	636.77	1118	26.04	405	45.0	1302804	23270	45.2	49948	2474	8.9

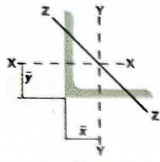


SOLERA PLANA

MEDIDA ESTÁNDAR axb		PESO TEÓRICO		ÁREA		MEDIDA ESTÁNDAR axb		PESO TEÓRICO		ÁREA		
Pulg.	mm	kg/m	kg/pza.*	pulg²	mm²	Pulg.	mm	kg/m	kg/pza.*	pulg²	mm²	
1/8"	1/2"	12.7	0.317	1.93	0.063	40.3	1 1/2"	38.1	2.849	17.38	0.563	362.90
	3/4"	19.1	0.476	2.90	0.094	60.6	2"	50.8	3.798	23.17	0.750	483.87
	1"	25.4	0.633	3.86	0.125	80.6	2 1/2"	63.5	4.748	28.96	0.938	604.84
	1 1/4"	31.7	0.790	4.82	0.156	100.6	3"	76.2	5.698	34.76	1.125	725.81
	1 1/2"	38.1	0.950	5.79	0.188	121.0	4"	101.6	7.597	46.34	1.500	967.74
	2"	50.8	1.266	7.72	0.250	161.3	5"	127	9.496	57.93	1.875	1,209.68
	2 1/2"	63.5	1.583	9.65	0.313	201.6	6"	152.4	11.395	69.51	2.250	1,451.61
	3"	76.2	1.899	11.59	0.375	241.9	8"	203	15.194	92.68	3.000	1,935
3/16"	1/2"	12.7	0.476	2.90	0.094	60.6	10"	254.0	18.992	115.85	3.750	2,419
	3/4"	19.1	0.716	4.37	0.141	91.2	12"	304.8	22.790	139.02	4.500	2,903
	1"	25.4	0.952	5.81	0.188	121.3	1 1/2"	38.1	3.798	23.17	0.750	483.87
	1 1/4"	31.7	1.188	7.25	0.235	151.4	2"	50.8	5.065	30.90	1.000	645.16
	1 1/2"	38.1	1.428	8.71	0.282	181.9	2 1/2"	63.5	6.331	38.62	1.250	806.45
	2"	50.8	1.904	11.61	0.376	242.6	3"	76.2	7.597	46.34	1.500	967.74
	2 1/2"	63.5	2.380	14.52	0.470	303.2	4"	101.6	10.129	61.79	2.000	1,290.32
	3"	76.2	2.856	17.42	0.564	363.9	5"	127	12.661	77.23	2.500	1,612.90
1/4"	1/2"	12.7	0.633	3.86	0.125	80.6	6"	152.4	15.194	92.68	3.000	1,935.48
	3/4"	19.1	0.952	5.81	0.188	121.3	8"	203.2	20.258	123.57	4.000	2,580.64
	1"	25.4	1.266	7.72	0.250	161.3	10"	254.0	25.322	154.46	5.000	3,225.80
	1 1/4"	31.7	1.580	9.64	0.312	201.3	12"	304.8	30.388	185.37	6.000	3,871
	1 1/2"	38.1	1.899	11.58	0.375	241.9	1 1/2"	38.1	4.748	28.96	0.938	604.84
	2"	50.8	2.532	15.45	0.500	322.6	2"	50.8	6.331	38.62	1.250	806.45
	2 1/2"	63.5	3.165	19.31	0.625	403.2	2 1/2"	63.5	7.913	48.27	1.563	1,008.06
	3"	76.2	3.798	23.17	0.750	483.9	3"	76.2	9.496	57.93	1.875	1,209.68
	4"	101.6	5.065	30.90	1.000	645.2	4"	101.6	12.661	77.23	2.500	1,612.90
	5"	127	6.331	38.62	1.250	806.5	5"	127	15.827	96.54	3.125	2,016.13
	6"	152.4	7.597	46.34	1.500	967.7	6"	152.4	18.992	115.85	3.750	2,419.35
	8"	203.2	10.130	61.79	2.000	1,290	8"	203.2	25.322	154.46	5.000	3,225.80
5/16"	10"	254	12.662	77.24	2.500	1,613	10"	254.0	31.654	193.09	6.250	4,032.25
	12"	305	15.194	92.68	3.000	1,935	12"	304.8	37.984	231.70	7.500	4,839
	1 1/2"	38.1	2.378	14.51	0.469	302.9	1 1/2"	38.1	5.698	34.76	1.125	725.81
	2"	50.8	3.170	19.34	0.626	403.9	2"	50.8	7.597	46.34	1.500	967.74
	2 1/2"	63.5	3.963	24.17	0.782	504.8	2 1/2"	63.5	9.496	57.93	1.875	1,209.68
	3"	76.2	4.756	29.01	0.939	605.8	3"	76.2	11.395	69.51	2.250	1,451.61
	4"	101.6	6.341	38.68	1.252	807.7	4"	101.6	15.194	92.68	3.000	1,935.48
	5"	127	7.926	48.35	1.565	1,009.7	5"	127	18.992	115.85	3.750	2,419.35
	6"	152.4	9.511	58.02	1.878	1,211.6	6"	152.4	22.790	139.02	4.500	2,903.22
	8"	203.2	12.682	77.36	2.504	1,615.4	8"	203.2	30.388	185.37	6.000	3,870.96
	10"	254	15.852	96.70	3.130	2,019.3	10"	254.0	37.984	231.70	7.500	4,838.70
	12"	305	19.022	116.03	3.756	2,423	12"	304.8	45.580	278.04	9.000	5,806
3/4"	1 1/2"	38.1	2.378	14.51	0.469	302.9	2"	50.8	10.129	61.79	2.000	1,290.32
	2"	50.8	3.170	19.34	0.626	403.9	3"	76.2	15.194	92.68	3.000	1,935.48
	2 1/2"	63.5	3.963	24.17	0.782	504.8	4"	101.6	20.258	123.57	4.000	2,580.64
	3"	76.2	4.756	29.01	0.939	605.8	5"	127	25.323	154.47	5.000	3,225.80
	4"	101.6	6.341	38.68	1.252	807.7	6"	152.4	30.387	185.36	6.000	3,870.96
	5"	127	7.926	48.35	1.565	1,009.7	8"	203.2	40.516	247.15	8.000	5,161.28
	6"	152.4	9.511	58.02	1.878	1,211.6	10"	254.0	50.646	308.94	10.000	6,451.60
	8"	203.2	12.682	77.36	2.504	1,615.4	12"	304.8	60.774	370.72	12.000	7,742
1"	10"	254	15.852	96.70	3.130	2,019.3	12"	304.8	60.774	370.72	12.000	7,742
	12"	305	19.022	116.03	3.756	2,423						

* El peso por pieza corresponde a un tramo de 6.10 mts. de longitud.

* El peso por pieza corresponde a un tramo de 6.10 mts. de longitud.

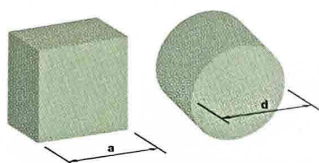


ÁNGULO

(APS) ÁNGULO LADOS IGUALES (LI)

MEDIDA ESTANDAR		PESO TEORICO		ÁREA	EJES X-X y Y-Y				EJE Z-Z
Pulg.	mm	kg/m	kg/pza.*	cm ²	I	S	r	x = y	r min.
					cm ⁴	cm ³	cm	cm	cm
1/8"	3/4"	19.1	0.88	5.368	1.11	0.37	0.28	0.58	0.38
	1"	25.4	1.19	7.259	1.52	0.92	0.51	0.79	0.48
	1 1/4"	31.8	1.50	9.15	1.93	1.83	0.80	0.97	0.60
	1 1/2"	38.1	1.83	11.163	2.34	3.25	1.18	1.17	0.73
	1 3/4"	44.5	2.14	13.054	2.74	5.41	1.64	1.40	0.86
5/32"	2"	50.8	2.46	15.006	3.10	7.91	2.13	1.60	0.99
	1 1/2"	38.1	2.28	13.908	2.91	3.95	1.47	1.16	0.80
	2"	50.8	3.09	18.849	3.95	9.73	2.71	1.57	1.05
3/16"	2 1/2"	63.5	3.92	23.912	5.01	19.48	4.34	1.97	1.24
	1"	25.4	1.73	10.553	2.21	1.25	0.72	0.76	0.48
	1 1/4"	31.8	2.20	13.42	2.79	2.54	1.16	0.97	0.60
	1 1/2"	38.1	2.68	16.348	3.43	4.58	1.64	1.17	0.73
	1 3/4"	44.5	3.15	19.215	4.03	7.49	2.29	1.37	0.86
	2"	50.8	3.63	22.143	4.61	11.45	3.11	1.57	0.99
	2 1/2"	63.5	4.61	28.121	5.81	22.89	4.92	1.98	1.24
	3"	76.2	5.52	33.672	7.03	40.01	7.22	2.39	1.51
1/4"	3 1/2"	88.9	6.55	39.955	8.36	64.36	9.92	2.78	1.76
	1"	25.4	2.22	13.542	2.80	1.54	0.92	0.74	0.48
	1 1/4"	31.8	2.86	17.446	3.72	3.21	1.49	0.94	0.60
	1 1/2"	38.1	3.48	21.228	4.40	5.83	2.20	1.14	0.73
	1 3/4"	44.5	4.12	25.132	5.20	9.57	3.11	1.35	0.86
	2"	50.8	4.75	28.975	6.06	14.57	4.10	1.55	0.99
	2 1/2"	63.5	6.10	37.21	7.68	29.14	6.39	1.96	1.24
	3"	76.2	7.29	44.469	9.29	51.60	9.50	2.36	1.49
5/16"	3 1/2"	88.9	8.63	52.643	10.90	83.66	13.01	2.77	1.76
	4"	101.6	9.82	59.902	12.52	124.90	17.20	3.18	2.00
	2"	50.8	5.83	35.563	7.42	17.46	4.92	1.52	0.99
	2 1/2"	63.5	7.44	45.384	9.48	35.38	7.87	1.93	1.24
	3"	76.2	9.08	55.388	11.48	62.90	11.60	2.34	1.47
3/8"	3 1/2"	88.9	10.71	65.331	13.48	101.95	16.00	2.74	1.75
	4"	101.6	12.20	74.42	15.48	154.40	21.10	3.15	2.84
	5"	127.0	15.47	94.367	19.72	310.91	34.62	3.97	3.44
	2"	50.8	6.99	42.639	8.77	19.98	5.74	1.50	0.99
	2 1/2"	63.5	8.78	53.558	11.16	40.79	9.34	1.91	1.24
7/16"	3"	76.2	10.72	65.392	13.61	73.30	13.60	2.31	1.47
	3 1/2"	88.9	12.65	77.165	16.00	119.46	18.84	2.72	1.74
	4"	101.6	14.58	88.938	18.45	181.50	24.90	3.12	1.98
	5"	127.0	18.30	111.63	23.29	363.80	39.70	3.96	2.52
	6"	152.4	22.17	135.237	28.13	640.60	57.80	4.78	3.05
1/2"	4"	101.6	16.82	102.602	21.35	206.90	28.70	3.12	1.98
	5"	127.0	21.28	129.808	26.97	417.10	45.70	3.94	2.52
	6"	152.4	25.60	156.16	32.65	735.90	66.70	4.75	3.02
	3"	76.2	13.99	85.339	17.74	92.40	17.50	2.29	1.47
5/8"	3 1/2"	88.9	16.52	100.772	20.97	151.51	24.41	2.69	1.73
	4"	101.6	19.05	116.205	24.19	231.40	32.30	3.10	1.98
	5"	127.0	24.11	147.071	30.65	468.30	51.60	3.91	2.49
	6"	152.4	29.17	177.937	37.10	828.70	75.50	4.72	2.99
3/4"	4"	101.6	23.36	142.496	35.10	318.80	46.00	3.05	1.98
	6"	152.4	36.01	219.661	45.87	1005.60	92.80	4.67	2.99
3/4"	6"	152.4	42.71	260.531	54.45	1171.70	109.10	4.65	2.98

* El peso por pieza corresponde a un tramo de 6.10 mts. de longitud.



REDONDOS Y CUADRADOS

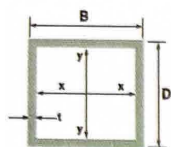
REDONDOS (OS)

MEDIDA ESTÁNDAR	DIMENSIONES (d)		PESO TEÓRICO		ÁREA DE LA SECCIÓN	
	pulg.	mm	kg/m	kg/pieza*	pulg ²	mm ²
3/8"	0.375	9.5	0.559	3.410	0.11	71.26
7/16"	0.438	11.1	0.761	4.640	0.15	97.21
1/2"	0.500	12.7	0.994	6.063	0.20	126.68
9/16"	0.562	14.3	1.257	7.668	0.25	160.05
5/8"	0.625	15.9	1.552	9.467	0.31	197.93
11/16"	0.688	17.5	1.878	11.456	0.37	239.84
3/4"	0.750	19.1	2.235	13.634	0.44	285.02
13/16"	0.812	20.6	2.624	16.006	0.52	334.10
7/8"	0.875	22.2	3.042	18.556	0.60	387.95
15/16"	0.938	23.8	3.493	21.307	0.69	445.82
1"	1.000	25.4	3.974	24.241	0.79	506.71
1 1/16"	1.062	27.0	4.486	27.365	0.89	571.50
1 1/8"	1.125	28.6	5.029	30.677	0.99	641.30
1 3/16"	1.188	30.2	5.605	34.191	1.11	715.13
1 1/4"	1.250	31.8	6.211	37.887	1.23	791.73
1 5/16"	1.312	33.3	6.846	41.761	1.35	872.23
1 3/8"	1.375	34.9	7.470	45.567	1.48	958.00
1 1/2"	1.500	38.1	8.942	54.546	1.77	1,140.09
1 9/16"	1.562	39.7	9.704	59.194	1.92	1,236.30
1 3/4"	1.750	44.5	12.170	74.237	2.41	1,551.80
1 13/16"	1.812	46.0	13.060	79.666	2.58	1,663.71
2"	2.000	50.8	15.900	96.990	3.14	2,026.83
2 1/8"	2.125	54.0	17.950	109.495	3.55	2,288.11
2 1/4"	2.250	57.2	20.120	122.732	3.98	2,565.21
2 1/2"	2.500	63.5	24.840	151.524	4.91	3,166.93

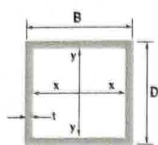
CUADRADOS

MEDIDA ESTÁNDAR	DIMENSIONES (a)		PESO TEÓRICO		ÁREA DE LA SECCIÓN	
	pulg.	mm	kg/m	kg/pieza*	pulg ²	mm ²
3/8"	0.375	9.5	0.712	4.34	0.14	90.73
1/2"	0.500	12.7	1.266	7.72	0.25	161.29
5/8"	0.625	15.9	1.978	12.1	0.39	252.02
3/4"	0.750	19.1	2.848	17.4	0.56	362.90
1"	1.000	25.4	5.060	30.9	1.00	645.16
1 1/4"	1.250	31.8	7.906	48.2	1.56	1,008.06
1 1/2"	1.500	38.1	11.395	69.5	2.25	1,451.61
2"	2.000	50.8	20.240	123.5	4.00	2,580.64
2 1/2"	2.500	63.5	31.620	192.9	6.25	4,032.25
3"	3.000	76.2	45.530	277.7	9.00	5,806.44

* El peso por pieza corresponde a un tramo de 6.10 mts. de longitud.


PTR
PERFIL TUBULAR CUADRADO (OR) (HSS)

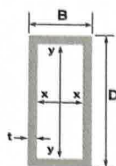
MEDIDA	ESPESOR		CALIBRE	PESO		ÁREA	MOMENTO DE INERCIA	MÓDULO DE SECCIÓN	RADIO DE GIRO	COLOR
	Pulg	mm		kg/m	kg/pza.					
D x B						cm2	I cm4	S cm3	r cm	
1" x 1" 25 x 25	0.075	1.910	14	1.33	8.113	1.70	1.52	1.19	0.95	Blanco
	0.095	2.281	13	1.62	9.882	2.07	1.75	1.38	0.92	Verde
	0.133	3.378	10	2.10	12.81	2.68	2.04	1.60	0.87	Rojo
1 1/4" x 1 1/4" 32 x 32	0.075	1.910	14	1.71	10.431	2.18	3.17	1.99	1.20	Blanco
	0.090	2.281	13	2.20	13.42	2.62	3.62	2.34	1.18	Verde
1 1/2" x 1 1/2" 38 x 38	0.075	1.910	14	2.09	12.749	2.66	5.71	3.00	1.46	Azul
	0.110	2.794	12	2.94	17.934	3.74	7.56	3.97	1.42	Blanco
	0.125	3.175	11	3.27	19.947	4.18	8.21	4.31	1.40	Verde
	0.154	3.801	9	3.89	23.729	4.96	9.24	4.85	1.37	Rojo
2" x 2" 51 x 51	0.075	1.910	14	2.85	17.385	3.63	14.28	5.62	1.98	Azul
	0.110	2.794	12	4.05	24.705	5.16	19.43	7.65	1.94	Blanco
	0.125	3.175	11	4.54	27.694	5.79	21.37	8.41	1.92	Verde
	0.156	3.801	9	5.50	33.550	7.02	24.88	9.80	1.88	Rojo
	0.188	4.775	6	6.43	39.223	7.74	26.64	10.49	1.85	3/16"
	0.250	6.350	2	8.05	49.105	9.68	30.80	12.13	1.78	1/4"
2 1/2" x 2 1/2" 64 x 64	0.125	3.175	11	5.80	35.380	7.40	44.08	13.88	2.44	Blanco
	0.141	3.801	9	6.47	39.467	8.25	48.36	15.23	2.42	Verde
	0.188	4.775	6	8.34	50.874	10.63	59.32	18.68	2.36	Rojo
	0.250	6.350	2	10.58	64.538	12.71	67.42	21.30	2.31	1/4"
3" x 3" 76 x 76	0.125	3.175	11	7.07	43.127	9.01	78.93	20.72	2.96	Blanco
	0.156	3.801	9	8.66	52.826	11.05	94.24	24.72	2.92	Verde
	0.188	4.775	6	10.24	62.464	13.06	108.40	28.30	2.88	Rojo
	0.250	6.350	2	13.11	79.971	15.68	125.29	32.94	2.82	1/4"
3 1/2" x 3 1/2" 89 x 89	0.125	3.175	11	8.33	50.813	10.63	128.54	28.92	3.48	Blanco
	0.156	3.801	9	10.24	62.464	13.06	154.51	34.76	3.44	Verde
	0.188	4.775	6	12.14	74.054	15.48	179.01	40.27	3.40	Rojo
	0.250	6.350	2	15.63	95.343	19.93	220.16	49.53	3.32	1/4"
4" x 4" 102 x 102	0.125	3.175	11	9.60	58.560	12.24	195.49	38.48	4.00	Blanco
	0.156	3.801	9	11.82	72.102	15.07	236.16	46.49	3.96	Verde
	0.188	4.775	6	14.04	85.644	17.91	275.07	54.15	3.92	Rojo
	0.250	6.350	2	18.16	110.776	23.16	341.94	67.31	3.84	1/4"
	5/16"	7.950	5/16	22.07	134.627	28.13	398.80	78.50	3.76	5/16"
	3/8"	9.530	3/8	25.70	156.770	32.77	445.40	87.70	3.68	3/8"
4 1/2" x 4 1/2" 114 x 114	1/2"	12.710	1/2	32.19	196.359	41.03	512.00	100.50	3.53	1/2"
	0.125	3.175	11	10.86	66.246	13.85	282.40	49.41	4.51	Blanco
	0.156	3.801	9	13.40	81.740	17.08	342.44	59.92	4.48	Verde
	0.188	4.775	6	15.94	97.234	20.33	400.48	70.07	4.44	Rojo
5 x 5 127 x 127	0.250	6.350	2	20.69	126.209	26.38	501.90	87.82	4.36	1/4"
	0.125	3.175	11	12.13	74.0	15.47	391.9	61.7	5.03	Blanco
	0.156	3.962	9	14.98	91.4	19.1	476.6	75.1	5.00	Verde
	0.188	4.775	7	17.85	108.9	22.76	559.2	88.1	4.96	Rojo
	0.250	6.350	1/4	23.22	141.6	29.61	705.3	111.1	4.88	1/4"
	0.312	7.925	5/16	28.39	173.2	36.19	836.6	131.4	4.80	5/16"
	0.375	9.525	3/8	33.29	203.1	42.45	949.0	149.3	4.72	3/8"
	0.500	12.700	1/2	42.31	258.1	53.94	1123.8	177.0	4.57	1/2"



PTR

PERFIL TUBULAR CUADRADO (OR) (HSS)

MEDIDA DxB	ESPESOR		CALIBRE	PESO		ÁREA	MOMENTO DE INERCIÓN	MÓDULO DE SECCIÓN	RADIO DE GIRO	COLOR
pulg - mm	pulg - mm			kg/m	kg/pza.	cm2	I cm4	S cm3	r cm	
6" X 6" 152 x 152	0.188	4.775	3/16"	21.62	131.882	27.55	990.6	130.0	5.99	3/16"
	0.250	6.350	1/4"	28.30	172.63	36.10	1,261.2	165.5	5.92	1/4"
	0.312	7.925	5/16"	34.73	211.853	44.26	1,510.9	198.3	5.84	5/16"
	0.375	9.525	3/8"	40.89	249.429	52.13	1,731.5	227.8	5.77	3/8"
	0.500	12.700	1/2"	52.44	319.884	67.10	2,102.0	275.3	5.61	1/2"
7" X 7" 178 x 178	0.188	4.775	3/16"	25.42	155.062	32.39	1,602.5	180.3	7.04	3/16"
	0.250	6.350	1/4"	33.36	203.496	42.52	2,056.2	231.1	6.96	1/4"
	0.312	7.925	5/16"	41.06	250.466	52.32	2,476.6	278.6	6.88	5/16"
	0.375	9.525	3/8"	48.48	295.728	61.81	2,859.5	321.2	6.81	3/8"
	0.500	12.700	1/2"	62.58	381.738	80.00	3,251.3	396.6	6.65	1/2"
8" X 8" 203 x 203	0.188	4.775	3/16"	29.21	178.181	37.23	2,422.5	239.3	8.08	3/16"
	0.250	6.350	1/4"	38.42	234.362	48.97	3,125.9	308.1	8.00	1/4"
	0.312	7.925	5/16"	47.38	289.018	60.39	3,783.5	372.0	7.92	5/16"
	0.375	9.525	3/8"	56.09	342.149	71.61	4,412.1	432.6	7.85	3/8"
	0.500	12.700	1/2"	72.70	443.47	92.90	5,452.6	539.1	7.69	1/2"
	0.625	15.875	5/8"	88.28	538.508	105.81	6,077.0	598.1	7.60	5/8"
10" X 10" 254 x 254	0.188	4.775	3/16"	36.80	224.5	43.61	4,495.3	354.0	10.16	3/16"
	0.250	6.350	1/4"	48.56	296.216	61.87	6,285.0	493.3	10.10	1/4"
	0.312	7.925	5/16"	60.05	366.305	76.77	7,617.0	601.4	9.98	5/16"
	0.375	9.525	3/8"	71.28	434.808	90.97	8,907.0	703.0	9.91	3/8"
	0.500	12.700	1/2"	92.95	566.995	118.71	11,280.0	881.2	9.75	1/2"
	0.625	15.875	5/8"	113.59	692.899	135.48	12,653.4	996.3	9.70	5/8"
12" X 12" 305 x 305	0.250	6.350	1/4"	58.68	345.748	74.87	11,030.0	722.7	12.14	1/4"
	0.312	7.925	5/16"	72.71	443.531	92.90	13,486.0	884.9	12.06	5/16"
	0.375	9.525	3/8"	86.46	527.406	110.32	15,817.0	1,039.0	12.00	3/8"
	0.500	12.700	1/2"	113.20	690.52	144.52	20,187.0	1,325.7	11.84	1/2"
	0.625	15.875	5/8"	138.90	847.29	165.81	22,809.5	1,497.8	11.70	5/8"
14" X 14" 356 x 356	0.312	7.925	5/16"	85.36	520.696	109.00	21,727.0	1,222.5	14.15	5/16"
	0.375	9.525	3/8"	101.66	620.126	129.68	25,598.0	1,440.4	14.07	3/8"
	0.500	12.700	1/2"	133.46	814.106	170.32	32,924.0	1,851.7	13.92	1/2"
	0.625	15.875	5/8"	164.23	1001.8	195.48	37,294.3	2,097.5	13.82	5/8"
16" X 16" 406 x 406	0.312	7.925	5/16"	98.03	597.983	125.16	32,841.0	1,615.8	16.12	5/16"
	0.375	9.525	3/8"	116.85	712.785	149.00	38,751.0	1,900.9	16.13	3/8"
	0.500	12.700	1/2"	153.73	937.753	196.13	44,948.0	2,458.0	15.98	1/2"
	0.625	15.875	5/8"	189.55	1156.2	225.81	57,023.7	2,802.2	15.88	5/8"

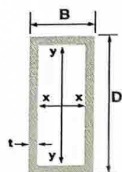


PTR

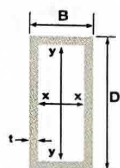
PERFIL TUBULAR RECTANGULAR (OR) (HSS)

MEDIDA DxB	ESPESOR		CALIBRE	PESO		ÁREA	MOMENTO DE INERCIA		MÓDULO DE SECCIÓN		RADIO DE GIRO		COLOR
	pulg - mm	pulg mm		kg/m	kg/pza.		I xx cm4	I yy cm4	S xx cm3	S yy cm3	r xx cm.	r yy cm.	
3 x 2 76 X 51	0.125	3.18	11	5.80	35.38	7.4	57.4	30.5	15.1	12.0	2.79	2.03	□ Blanco
	0.141	3.58	9	6.47	39.47	8.25	63.0	33.4	16.5	13.2	2.76	2.01	■ Verde
	0.188	4.78	3/16	8.34	50.87	10.63	77.4	40.8	20.3	16.0	2.70	1.96	■ Rojo
4 x 2 102 X 51	0.125	3.18	11	7.07	43.13	9.01	117.3	36.7	23.1	15.6	3.61	2.10	□ Blanco
	0.156	3.96	9	8.66	52.83	11.05	140.2	47.0	27.6	18.5	3.56	2.06	■ Verde
	0.188	4.78	3/16	10.24	62.46	13.06	161.3	53.6	31.7	21.1	3.51	2.03	■ Rojo
4 x 3 102 X 76	0.125	3.18	11	8.33	50.81	10.63	156.4	100.5	30.8	26.4	3.84	3.07	□ Blanco
	0.156	3.96	9	10.24	62.46	13.06	188.2	120.5	37.0	31.6	3.80	3.04	■ Verde
	0.188	4.78	3/16	12.14	74.05	15.48	218.2	139.4	43.0	36.6	3.75	3.00	■ Rojo
	0.250	6.35	1/4	15.63	95.34	19.93	268.7	170.8	52.9	44.8	3.67	2.93	1/4"
5 x 3 127 X 76	0.125	3.18	11	9.60	58.56	12.24	268.2	122.0	42.2	32.0	4.68	3.16	□ Blanco
	0.156	3.96	9	11.82	72.10	15.07	324.2	146.8	51.1	38.5	4.64	3.12	■ Verde
	0.188	4.78	3/16	14.04	85.64	17.91	377.9	170.4	59.5	44.7	4.59	3.08	■ Rojo
	0.250	6.35	1/4	18.16	110.78	23.16	470.3	210.3	74.1	55.2	4.51	3.01	1/4"
6" x 2" 152 X 51	0.125	3.18	11	9.61	58.62	11.42	309.3	54.5	40.6	21.5	5.21	2.18	□ Blanco
	0.156	3.96	9	10.35	63.14	12.2	329.0	57.9	43.0	22.8	5.19	2.20	■ Verde
	0.188	4.78	3/16	14.02	85.52	16.71	437.0	75.3	57.2	29.7	5.11	2.11	■ Rojo
	0.250	6.35	1/4	18.16	110.78	21.68	545.3	91.6	71.5	36.1	5.00	2.06	1/4"
6" x 3" 152 X 76	0.125	3.18	11	10.86	66.25	13.85	419.4	143.5	55.0	37.7	5.50	3.22	□ Blanco
	0.156	3.96	9	13.40	81.74	17.08	508.9	173.1	66.8	45.4	5.46	3.18	■ Verde
	0.188	4.78	3/16	15.94	97.23	20.33	595.3	201.4	78.1	52.9	5.41	3.15	■ Rojo
	0.250	6.35	1/4	20.69	126.21	26.38	746.6	249.7	98.0	65.5	5.32	3.08	1/4"
6" x 4" 152 X 102	0.125	3.18	11	12.13	73.99	15.47	509.2	273.6	66.8	53.9	5.74	4.21	□ Blanco
	0.156	3.96	9	14.98	91.38	19.1	619.8	332.2	81.3	65.4	5.70	4.17	■ Verde
	0.188	4.78	3/16	17.85	108.89	22.76	727.6	388.9	95.5	76.6	5.65	4.13	■ Rojo
	0.250	6.35	1/4	23.22	141.64	29.61	918.7	488.5	120.6	96.2	5.57	4.06	1/4"
7" x 5" 178 X 127	0.188	4.78	3/16	21.62	131.88	27.55	1240.4	736.7	139.3	116.35	6.7	5.18	3/16"
	0.250	6.35	1/4	28.30	172.63	36.10	1581.7	940.7	178.6	148.14	6.6	5.11	1/4"
	0.312	7.92	5/16	34.73	211.85	44.26	1893.9	1119.7	213.0	177.00	6.6	5.03	5/16"
	0.375	9.53	3/8	40.89	249.43	52.13	2172.7	1282.0	244.2	201.56	6.5	4.95	3/8"
	0.500	12.70	1/2	52.44	319.88	67.10	2643.1	1548.4	296.6	244.17	6.3	4.83	1/2"
8" x 4" 203 X 102	0.188	4.78	3/16	21.62	131.88	27.55	1469.3	449.5	144.7	98.65	7.3	4.27	3/16"
	0.250	6.35	1/4	28.30	172.63	36.10	1877.2	636.8	185.2	126.00	7.2	4.19	1/4"
	0.312	7.92	5/16	34.73	211.85	44.26	2243.5	753.4	221.2	148.30	7.1	4.11	5/16"
	0.375	9.53	3/8	40.89	249.43	52.13	2576.5	857.4	254.0	168.79	7.0	4.06	3/8"
	0.500	12.70	1/2	52.44	319.88	67.10	3125.9	1023.9	308.1	201.56	6.8	3.91	1/2"
8" x 6" 203 X 152	0.188	4.78	3/16	25.42	155.06	32.39	1984.0	1252.9	191.7	163.87	7.8	6.22	3/16"
	0.250	6.35	1/4	33.36	203.50	42.52	2510.6	1606.7	245.8	211.40	7.7	6.15	1/4"
	0.312	7.92	5/16	41.06	250.47	52.32	3013.5	1931.3	296.6	254.00	7.6	6.07	5/16"
	0.375	9.53	3/8	48.48	295.73	61.81	3483.9	2226.8	342.5	291.70	7.5	6.00	3/8"
	0.500	12.70	1/2	62.58	381.74	80.00	4287.2	2734.6	422.8	358.88	7.3	5.87	1/2"

PERFIL TUBULAR RECTANGULAR (OR) (HSS)



MEDIDA DxB	ESPESOR		CALIBRE	PESO		ÁREA	MOMENTO DE INERCIA		MÓDULO DE SECCIÓN		RADIO DE GIRO		COLOR
	pulg - mm	pulg mm		kg/m	kg/pza.		I xx cm4	I yy cm4	S xx cm3	S yy cm3	r xx cm.	r yy cm.	
10" X 2" 254 x 51	0.188	4.78	3/16	21.62	131.88	27.55	1818.9	130.7	143.2	51.46	8.1	2.18	3/16"
	0.250	6.35	1/4	28.30	172.63	36.10	2310.1	160.3	181.9	63.10	8.0	2.11	1/4"
	0.312	7.92	5/16	34.73	211.85	44.26	2751.3	184.0	261.3	72.43	7.9	2.04	5/16"
	0.375	9.53	3/8	40.89	249.43	52.13	3138.4	201.9	247.5	79.48	7.8	1.97	3/8"
10" X 4" 254 x 102	0.188	4.78	3/16	25.42	155.06	32.39	2568.2	616.0	201.6	212.10	8.9	4.37	3/16"
	0.250	6.35	1/4	33.36	203.50	42.52	3300.7	782.5	260.6	153.87	8.8	4.30	1/4"
	0.312	7.92	5/16	41.06	250.47	52.32	3954.2	932.4	313.0	183.54	8.7	4.22	5/16"
	0.375	9.53	3/8	48.48	295.73	61.81	4578.6	1061.4	360.5	209.75	8.6	4.14	3/8"
	0.500	12.70	1/2	62.58	381.74	80.00	5660.8	1282.0	444.1	252.36	8.4	4.01	1/2"
10" X 6" 254 x 152	0.188	4.78	3/16	29.21	178.18	37.23	3321.5	1519.2	262.2	199.92	9.5	6.38	3/16"
	0.250	6.35	1/4	38.42	234.36	48.97	4287.2	1952.1	337.6	255.64	9.4	6.32	1/4"
	0.312	7.92	5/16	47.38	289.02	60.39	5202.9	2351.1	409.7	308.10	9.3	6.25	5/16"
	0.375	9.53	3/8	56.09	342.15	71.61	6035.4	2722.2	475.2	357.24	9.2	6.17	3/8"
	0.500	12.70	1/2	72.70	443.47	92.90	7533.8	3363.2	593.2	440.81	9.0	6.02	1/2"
12" X 2" 305 x 51	0.188	4.78	3/16	25.42	155.06	32.39	2996.9	156.5	196.6	61.62	9.6	2.20	3/16"
	0.250	6.35	1/4	33.36	203.50	42.52	3837.7	192.3	252.4	75.71	9.5	2.13	1/4"
12" X 4" 305 x 102	0.188	4.78	3/16	29.21	178.18	37.23	4087.4	728.4	268.8	143.39	10.5	4.42	3/16"
	0.250	6.35	1/4	38.42	234.36	48.97	5286.1	928.2	345.8	181.90	10.4	4.34	1/4"
	0.312	7.92	5/16	47.38	289.02	60.39	6368.3	1107.2	417.9	217.95	10.3	4.82	5/16"
	0.375	9.53	3/8	56.09	342.15	71.61	7408.9	1269.5	485.1	249.10	10.2	4.22	3/8"
	0.500	12.70	1/2	72.70	443.47	92.90	9198.7	1535.9	603.0	303.16	10.0	4.06	1/2"
12" X 6" 305 x 152	0.188	4.78	3/16	33.01	201.36	42.06	5161.3	1781.5	339.2	234.34	11.1	6.50	3/16"
	0.250	6.35	1/4	43.50	265.35	55.42	6701.3	2297.6	440.8	301.52	11.0	6.43	1/4"
	0.312	7.92	5/16	53.72	327.69	68.39	8158.1	2772.1	534.2	363.80	10.9	6.38	5/16"
	0.375	9.53	3/8	63.68	388.45	81.29	9490.0	3213.3	624.4	421.15	10.8	6.30	3/8"
	0.500	12.70	1/2	82.83	505.26	105.81	11945.8	3995.8	783.3	524.40	10.6	6.15	1/2"
12" X 8" 305 x 204	0.250	6.35	1/4	48.56	296.22	61.87	8158.1	4370.4	534.2	431.00	11.5	8.41	1/4"
	0.312	7.92	5/16	60.05	366.31	76.77	9947.9	5327.8	652.2	524.40	11.4	8.33	5/16"
	0.375	9.53	3/8	71.28	434.81	90.97	11612.9	6201.9	762.0	611.24	11.3	8.28	3/8"
	0.500	12.70	1/2	92.95	567.00	118.71	14693.0	7825.2	965.2	768.56	11.2	8.13	1/2"
14" X 4" 356 x 102	0.250	6.35	1/4	43.50	265.35	55.42	7866.8	1073.9	442.5	211.40	11.2	4.39	1/4"
	0.312	7.92	5/16	53.72	327.69	68.39	9573.3	1286.2	537.5	252.36	11.8	4.34	5/16"
	0.375	9.53	3/8	63.68	388.45	81.29	11113.4	1473.5	626.0	290.10	11.7	4.27	3/8"
	0.500	12.70	1/2	82.83	505.26	105.81	13943.8	1794.0	783.3	352.32	11.5	4.11	1/2"
14" X 6" 356 x 152	0.250	6.35	1/4	48.56	296.22	61.87	9864.7	2638.9	553.9	345.77	12.6	6.53	1/4"
	0.312	7.92	5/16	60.05	366.31	76.77	11987.5	3192.5	675.2	419.51	12.5	6.45	5/16"
	0.375	9.53	3/8	71.28	434.81	90.97	14027.0	3708.6	788.2	486.70	12.4	6.40	3/8"
	0.500	12.70	1/2	92.95	567.00	118.71	17731.5	4620.2	996.3	608.00	12.2	6.25	1/2"



PTR

PERFIL TUBULAR RECTANGULAR (OR) (HSS)

MEDIDA DxB	ESPESOR		CALIBRE	PESO		ÁREA cm ²	MOMENTO DE INERCIÁ		MÓDULO DE SECCIÓN		RADIO DE GIRO		COLOR
	pulg - mm	pulg mm		kg/m	kg/pza.		I xx cm ⁴	I yy cm ⁴	S xx cm ³	S yy cm ³	r xx cm.	r yy cm.	
14 X 10 356 x 254	0.312	7.92	5/16	72.71	443.53	92.90	16857.4	10072.8	948.8	793.13	13.5	10.49	5/16"
	0.375	9.53	3/8	86.46	527.41	110.32	19812.6	11821.0	1114.3	930.80	13.4	10.36	3/8"
	0.500	12.70	1/2	113.20	690.52	144.52	25306.9	15026.0	1424.0	1184.78	13.3	10.21	1/2"
16 X 4 406 x 102	0.312	7.92	5/16	60.05	366.31	76.77	13610.8	1461.0	670.2	288.41	13.3	4.37	5/16"
	0.375	9.53	3/8	71.28	434.81	90.97	15900.0	1681.6	783.3	331.00	13.2	4.29	3/8"
	0.500	12.70	1/2	92.95	567.00	118.71	20020.7	2052.0	986.5	403.12	13.0	4.17	1/2"
16 X 8 406 x 204	0.312	7.92	5/16	72.71	443.53	92.90	20020.7	6867.8	984.9	675.15	14.7	8.61	5/16"
	0.375	9.53	3/8	86.46	527.41	110.32	23517.0	8033.3	1156.9	789.86	14.6	8.53	3/8"
	0.500	12.70	1/2	113.20	690.52	144.52	30052.0	10156.0	1478.1	999.61	14.4	8.38	1/2"
16 X 12 406 x 305	0.312	7.92	5/16	85.36	520.70	109.00	26430.7	17023.9	1301.1	1117.60	15.6	12.52	5/16"
	0.375	9.53	3/8	101.66	620.13	129.68	31134.1	20062.4	1532.2	1315.88	15.5	12.45	3/8"
	0.500	12.70	1/2	133.46	814.11	170.32	40041.5	25723.1	1966.5	1687.87	15.3	12.28	1/2"
18 X 6 457 x 152	0.312	7.92	5/16	72.71	443.53	92.90	22726.2	4037.4	994.7	529.30	15.7	6.60	5/16"
	0.375	9.53	3/8	86.46	527.41	110.32	26680.4	4703.4	1168.4	616.15	15.6	6.53	3/8"
	0.500	12.70	1/2	113.20	690.52	144.52	34047.7	5868.9	1489.6	773.47	15.4	6.40	1/2"
20 X 4 508 x 102	0.312	7.92	5/16	72.71	443.53	92.90	24807.4	1818.9	976.7	357.24	16.4	4.42	5/16"
	0.375	9.53	3/8	86.46	527.41	110.32	29094.6	2093.6	1145.5	411.32	16.3	4.37	3/8"
	0.500	12.70	1/2	113.20	690.52	144.52	37201.0	2564.0	1456.8	504.72	16.0	4.22	1/2"
20 X 8 508 x 204	0.312	7.92	5/16	85.36	520.70	109.00	34880.2	8407.9	1373.2	825.91	17.9	8.79	5/16"
	0.375	9.53	3/8	101.66	620.13	129.68	41123.7	9823.1	1619.0	968.48	17.8	8.71	3/8"
	0.500	12.70	1/2	133.46	814.11	170.32	52861.4	12486.9	2081.2	1230.67	17.6	8.59	1/2"
20 X 12 508 x 305	0.312	7.92	5/16	98.03	597.98	125.16	44953.0	20603.5	1769.8	1352.00	18.9	12.85	5/16"
	0.375	9.53	3/8	116.85	712.79	149.00	53277.6	24266.3	2097.5	1593.00	18.9	12.78	3/8"
	0.500	12.70	1/2	153.73	937.75	196.13	68678.2	31217.4	2703.9	2048.40	18.7	12.62	1/2"

LÁMINA LISA ROLADA EN CALIENTE Y FRÍO PROCEDENTE DE ROLLO

ESPESOR			PESO TEÓRICO		PESO APROXIMADO POR HOJA			
Calibre	pulg	mm	kg/m ²	kg/pie ²	3' X 8'	3' x 10'	4' X 8'	4' x 10'
1/4"	0.2500	6.35	49.83	4.63	111.12	138.89	148.15	185.19
3	0.2390	6.07	48.82	4.54	108.85	136.07	145.14	181.42
4	0.2242	5.69	45.77	4.25	102.05	127.57	136.07	170.09
5	0.2090	5.31	42.72	3.97	95.25	119.06	127.00	158.75
6	0.1940	4.93	39.67	3.69	88.45	110.56	117.93	147.42
3/16"	0.1870	4.75	37.28	3.46	83.11	103.89	110.82	138.52
7	0.1790	4.55	36.62	3.40	81.65	102.06	108.87	136.08
8	0.1640	4.17	33.57	3.12	74.85	93.56	99.80	124.75
9	0.1495	3.80	30.52	2.84	68.05	85.06	90.73	113.42
10	0.1345	3.42	27.46	2.55	61.23	76.53	81.64	102.04
1/8"	0.1250	3.18	24.92	2.31	55.56	69.45	74.08	92.60
11	0.1196	3.04	24.41	2.27	54.43	68.03	72.57	90.71
12	0.1046	2.66	21.36	1.98	47.63	59.53	63.50	79.38
13	0.0897	2.28	18.30	1.70	40.80	51.00	54.40	68.00
14	0.0747	1.90	15.26	1.42	34.02	42.53	45.37	56.71
15	0.0673	1.71	13.42	1.25	29.91	37.39	39.88	49.85
16	0.0598	1.52	12.20	1.13	27.20	34.00	36.27	45.34
17	0.0538	1.37	10.72	1.00	23.91	29.89	31.88	39.85
18	0.0478	1.21	9.76	0.91	21.76	27.20	29.02	36.27
19	0.0418	1.06	8.33	0.77	18.58	23.22	24.77	30.96
20	0.0359	0.91	7.32	0.68	16.32	20.40	21.76	27.20
21	0.0329	0.84	6.56	0.61	14.62	18.28	19.50	24.37
22	0.0299	0.76	6.10	0.57	13.60	17.00	18.13	22.67
23	0.0269	0.68	5.36	0.50	11.96	14.95	15.94	19.93
24	0.0239	0.61	4.88	0.45	10.88	13.60	14.51	18.13
25	0.0209	0.53	4.17	0.39	9.29	11.61	12.39	15.48
26	0.0179	0.45	3.66	0.34	8.16	10.20	10.88	13.60
27	0.0164	0.42	3.27	0.30	7.29	9.11	9.72	12.15
28	0.0149	0.38	3.05	0.28	6.80	8.50	9.07	11.33
29	0.0135	0.34	2.69	0.25	6.00	7.50	8.00	10.00
30	0.0120	0.30	2.44	0.23	5.44	6.80	7.25	9.07

PLACA

PLACA ANCHA CON ORILLA RECORTADA

ESPESOR			PESO TEÓRICO		PESO APROXIMADO POR HOJA				
pulgadas		mm	kg/m ²	kg/pie ²	5' x 20'	6' X 20'	7' x 20'	8' X 20'	10' X 20'
3/16"	0.188	4.78	37.84	3.52	352	422	492	562	703
1/4"	0.250	6.35	50.38	4.68	468	562	655	749	936
5/16"	0.313	7.95	62.93	5.85	585	702	818	935	1,169
3/8"	0.375	9.53	75.57	7.02	702	842	983	1,123	1,404
7/16"	0.438	11.13	88.10	8.18	818	982	1,146	1,310	1,637
1/2"	0.500	12.70	100.77	9.36	936	1,123	1,311	1,498	1,872
9/16"	0.563	14.30	113.27	10.52	1,052	1,263	1,473	1,684	2,105
5/8"	0.625	15.88	125.96	11.70	1,170	1,404	1,638	1,872	2,340
11/16"	0.688	17.48	138.44	12.86	1,286	1,543	1,801	2,058	2,572
3/4"	0.750	19.05	151.15	14.04	1,404	1,685	1,966	2,247	2,808
7/8"	0.875	22.23	176.34	16.38	1,638	1,966	2,294	2,621	3,276
1"	1.000	25.40	201.53	18.72	1,872	2,247	2,621	2,996	3,745
1 1/8"	1.125	28.58	226.72	21.06	2,106	2,528	2,949	3,370	4,213
1 1/4"	1.250	31.75	251.92	23.40	2,340	2,808	3,277	3,745	4,681
1 3/8"	1.375	34.93	277.11	25.74	2,574	3,089	3,604	4,119	5,149
1 1/2"	1.500	38.10	302.30	28.08	2,808	3,370	3,932	4,493	5,617
1 5/8"	1.625	41.28	327.49	30.42	3,042	3,651	4,259	4,868	6,085
1 3/4"	1.750	44.45	352.68	32.76	3,276	3,932	4,587	5,242	6,553
2"	2.000	50.80	403.07	37.45	3,745	4,494	5,242	5,991	7,489
2 1/4"	2.250	57.15	453.45	42.13	4,213	5,055	5,898	6,740	8,425
2 1/2"	2.500	63.50	503.83	46.81	4,681	5,617	6,553	7,489	9,361
3"	3.000	76.20	604.60	56.17	5,617	6,740	7,864	8,987	11,234

FÓRMULAS PARA CALCULAR EL PESO APROXIMADO DE UNA PLANCHA EN CUALQUIER DIMENSIÓN

$$P = e \times a \times l \times Pe$$

P = peso en kgs.

e = espesor en pulgadas

a = ancho en pulgadas

l = largo en pulgadas

Pe =

peso específico en kg/pulg³ = 0.130

EJEMPLO:

espesor ancho largo
0.500 72" 240"

sustituyendo en la fórmula:

$$P = 0.500 \times 72 \times 240 \times 0.130 = 1,123 \text{ kgs}$$

$$P = e \times a \times l \times fc$$

P = peso en kgs.

e = espesor en pulgadas

a = ancho en metros

l = largo en metros

fc =

factor de conversión = 201.2

EJEMPLO:

espesor ancho largo
0.500 1.83 6.10

sustituyendo en la fórmula:

$$P = 0.500 \times 1.83 \times 6.10 \times 201.2 = 1,123 \text{ kgs}$$

LAMINA Y PLACA ANTIDERRAPANTE

ESPESOR			PESO TEÓRICO	PESO APROXIMADO POR PIEZA			
Cal.	pulg.	mm	Kg/m ²	3' X 8'	3' x 10'	4' X 8'	4' x 10'
14	0.075	1.90	16.97	37.7	47.0	50.4	63.15
12	0.105	2.66	23.55	52.3	65.35	63.6	87.6
11	0.120	3.04	26.94	59.8	74.7	80.0	100.2
1/8	0.125	3.18	27.67	61.4	76.8	82.2	103.0
10	0.135	3.42	30.1	66.8	88.5	89.4	112.0
3/16	0.188	4.75	41.16	91.4	114.2	122.2	153.1
1/4	0.25	6.35	54.95	122.0	152.4	163.2	204.5



POLÍN MONTÉN

PERFIL C LAMINADO EN FRÍO

Descripción	Calibre	Peso		Dimensiones			Área	Eje X X			Eje Y Y			Factor columna	
		Kg/m	kg/pza.	d	t	R		lx	Sx	rx	ly	Sy	r		
D X B				mm	pulg.	mm	cm2	cm4	cm3	cm	cm4	cm3	cm	mm	Q
3" x 1 1/2"	14	2.40	14.40	19	0.0747	6.4	3.23	28	7.22	2.92	7	2.99	1.46	14.99	0.98
4" x 2"	10	5.85	23.40	19	0.1345	6.4	7.30	113	22.15	3.93	25	7.66	1.84	18.35	1.00
4" x 2"	12	4.55	18.20	19	0.1046	6.4	5.78	91	17.86	3.96	20	6.30	1.88	18.36	0.97
4" x 2"	14	3.29	13.16	19	0.0747	6.4	4.19	67	13.22	4.00	15	4.76	1.92	18.37	0.91
5" x 2"	10	6.56	32.80	19	0.1345	6.4	8.17	192	30.25	4.85	27	7.89	1.82	16.58	0.97
5" x 2"	12	5.08	25.40	19	0.1046	6.4	6.45	154	24.29	4.89	22	6.49	1.86	16.58	0.92
5" x 2"	14	3.68	18.40	19	0.0747	6.4	4.68	114	17.90	4.93	17	4.89	1.89	16.57	0.84
6" x 2"	10	7.38	44.28	19	0.1345	6.4	9.04	298	39.12	5.74	29	8.06	1.78	15.15	0.92
6" x 2"	12	5.82	34.92	19	0.1046	6.4	7.13	239	31.31	5.79	24	6.62	1.82	15.13	0.85
6" x 2"	14	4.21	25.26	19	0.0747	6.4	5.16	175	23.00	5.83	18	4.99	1.86	15.11	0.77
6" x 2 1/2"	10	7.95	47.70	19	0.1345	6.4	9.90	346	45.44	5.91	50	11.54	2.25	19.89	0.93
6" x 2 1/2"	12	6.18	37.08	19	0.1046	6.4	7.80	276	36.27	5.95	41	9.39	2.29	19.90	0.87
6" x 2 1/2"	14	4.46	26.76	19	0.0747	6.4	5.64	203	26.54	5.99	31	7.02	2.33	19.90	0.79
7" x 2 3/4"	10	9.00	63.00	19	0.1345	6.4	11.41	542	60.94	6.89	72	14.89	2.51	21.62	0.88
7" x 2 3/4"	12	6.99	48.93	19	0.1046	6.4	8.81	424	47.64	6.93	55	11.12	2.49	20.76	0.82
7" x 2 3/4"	14	5.04	35.28	19	0.0747	6.4	6.36	309	34.37	6.97	41	8.27	2.53	20.76	0.74
8" x 2 3/4"	10	9.82	78.56	19	0.1345	6.4	12.28	744	73.19	7.78	75	15.11	2.47	20.21	0.83
8" x 2 3/4"	12	7.72	61.76	19	0.1046	6.4	9.49	580	57.10	7.82	57	11.28	2.45	19.38	0.77
8" x 2 3/4"	14	5.57	44.56	19	0.0747	6.4	6.85	423	41.16	7.86	42	8.39	2.49	19.37	0.69
8" x 3"	10	10.14	81.12	19	0.1345	6.4	12.71	787	77.45	7.87	93	17.34	2.71	22.53	0.84
8" x 3"	12	7.89	63.12	19	0.1046	6.4	9.98	625	61.47	7.91	75	14.00	2.74	22.52	0.78
8" x 3"	14	5.63	45.04	19	0.0747	6.4	7.09	448	42.80	7.95	52	9.62	2.72	21.67	0.69
9" x 2 3/4"	10	10.52	94.68	19	0.1345	6.4	13.15	985	86.18	8.66	78	15.29	2.43	18.99	0.79
9" x 2 3/4"	12	8.26	74.34	19	0.1046	6.4	10.16	767	67.14	8.69	59	11.42	2.41	18.18	0.72
9" x 2 3/4"	14	5.96	53.64	19	0.0747	6.4	7.33	559	48.36	8.73	44	8.49	2.45	18.16	0.65
9" x 3 1/2"	10	11.78	106.02	19	0.1345	6.4	14.65	1167	102.10	8.92	150	24.02	3.19	26.65	0.81
9" x 3 1/2"	12	9.12	82.08	19	0.1046	6.4	11.33	911	79.09	8.96	114	18.07	3.17	25.79	0.75
9" x 3 1/2"	14	6.56	59.04	19	0.0747	6.4	8.05	652	53.19	9.00	80	12.45	3.15	24.91	0.63
10" x 2" 3/4"	10	11.22	112.20	19	0.1345	6.4	14.01	1269	99.92	9.52	80	15.44	2.39	17.92	0.75
10" x 2" 3/4"	12	8.80	88.00	19	0.1046	6.4	10.84	987	77.75	9.55	61	11.53	2.37	17.13	0.68
10" x 2" 3/4"	14	6.34	63.40	19	0.0747	6.4	7.81	719	55.97	9.59	45	8.58	2.41	17.09	0.61
10" x 3 1/2"	10	12.37	123.70	19	0.1345	6.4	15.52	1495	117.74	9.82	155	24.29	3.16	25.26	0.77
10" x 3 1/2"	12	9.62	96.20	19	0.1046	6.4	12.01	1165	91.12	9.85	118	18.28	3.13	24.42	0.71
10" x 3 1/2"	14	6.87	68.70	19	0.0747	6.4	8.53	833	61.37	9.88	82	12.59	3.11	23.55	0.60
12" x 3 1/2"	10	13.74	164.88	25	0.1345	6.4	17.26	2308	151.37	11.56	163	24.73	3.08	22.88	0.71
12" x 3 1/2"	12	10.64	127.68	25	0.1046	6.4	13.36	1796	117.02	11.59	124	18.61	3.05	22.07	0.64
12" x 3 1/2"	14	7.57	90.84	25	0.0747	6.4	9.50	1282	79.06	11.62	87	12.82	3.02	21.25	0.54

* Pesos teóricos calculados según peralte del polín

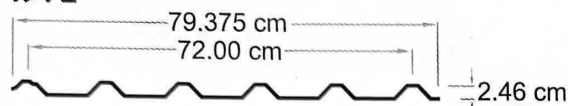
* Polín de 3" calculado a 6 mts.

* Polín de 4" se surte también en 5 y 6 mts.

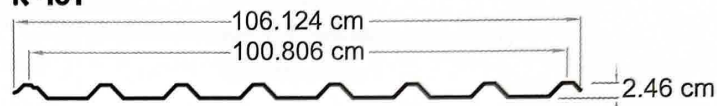
* Polín de 5" se surte también en 6 mts.

LÁMINA GAVANIZADA

R-72



R-101

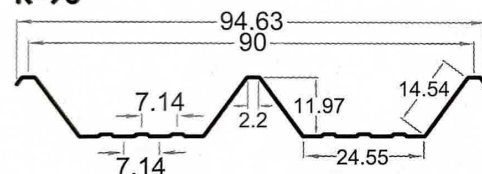


PROPIEDADES DE LA SECCIÓN

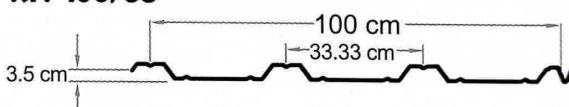
ACCIONES PERMISIBLES

CALIBRE	PESO (Kg/m ²)		COMPRESIÓN SUPERIOR (MOMENTO POSITIVO)			COMPRESIÓN INFERIOR (MOMENTO NEGATIVO)			VA MAX Kg/m	REACCIÓN MÁXIMA	
	R-72	R-101	I+ (Cm ⁴ /m)	S+ (Cm ³ /m)	M MAX+ (Kg-m)	I- (Cm ⁴ /m)	S- (Cm ³ /m)	M MAX- (Kg-m)		APOYO EXTERIOR Kg/m	APOYO INTERIOR Kg/m
30	3.39		2.90	1.73	26.98	2.02	1.56	24.34	742	147	181
28	4.12	3.92	3.93	2.41	37.60	2.66	2.11	32.92	1279	208	330
26	4.89	4.64	4.93	3.07	47.89	3.38	2.73	42.59	1846	279	515
24	5.64	5.36	5.81	3.65	56.94	4.14	3.25	50.70	2372	359	731
22	7.91	7.52	8.33	5.34	83.30	6.78	4.90	76.44	3393	680	1557

R-90



RN-100/35



PROPIEDADES DE LA SECCIÓN

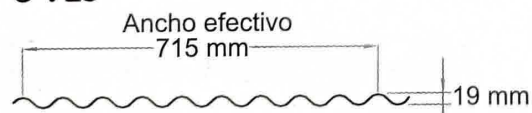
CALIBRE	PESO (Kg/ml)	PESO (Kg/m ²)	INERCIÁ (Cm ⁴ /m)	MÓDULO DE SECCIÓN (Cm ³ /m)
26	4.69	5.21	81.48	8.92
24	5.42	6.02	100.07	11.26
22	7.6	8.44	155.93	18.39

PROPIEDADES DE LA SECCIÓN

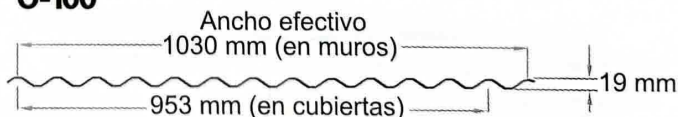
CALIBRE	PESO APROX. KG/ML	PESO APROX. KG/M ²	COMPRESIÓN SUPERIOR M+			COMPRESIÓN INFERIOR M-		
			Ixx + Cm ⁴ /M.	Sxx + Cm ³ /M.	M max + Kg-M.	Ixx - Cm ⁴ /M.	Sxx - Cm ³ /M.	M max - Kg-M.
26	4.68	4.68	10.57	4.42	68.95	6.86	3.68	57.41
24	5.41	5.41	12.76	5.38	83.93	8.21	4.47	69.73
22*	7.60*	7.60*	18.53	8.05	125.58	12.53	7.11	110.92

*Estos calibres se fabricarán sólo bajo consulta técnica.

O-725



O-100



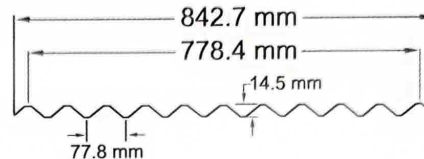
PROPIEDADES DE LA SECCIÓN

CALIBRE	PESO APROX. KG/ML		PESO APROX. KG/M ²			COMPRESIÓN SUPERIOR O INFERIOR		
	O-725	O-100	KG/M ²			Ixx Cm ⁴ /m	Sxx Cm ³ /m	M max Kg-M.
			O-725	O-100 Muro	O-100 Techo			
30	2.44*		3.41*			1.84	1.90	29.64
28	2.97	3.96	4.16	3.83	4.15	2.28	2.35	36.66
26	3.52*	4.69	4.93*	4.54	4.92	2.74	2.82	44.00
24		5.42		5.25	5.68	3.20	3.30	51.50

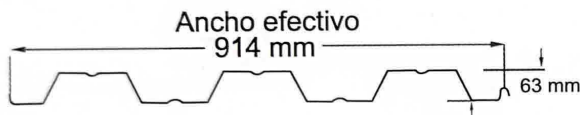
*Estos calibres se fabricarán sólo bajo consulta técnica.

LÁMINA GAVANIZADA

0-30 (Full Hard)



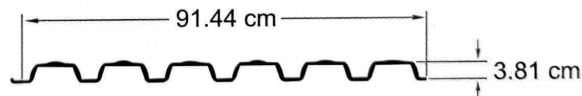
Losacero Deck 25



PROPIEDADES DE LA SECCIÓN					
CAL	PESO APROX.	PESO APROX.	COMPRESIÓN SUPERIOR O INFERIOR		
	KG/ML	KG/M ²	Ixx	Sxx	M max
32	1.89	2.42	0.53	0.72	11.23
28	2.97	3.81	0.78	1.05	44

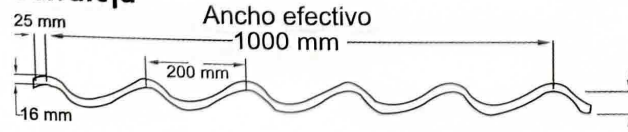
PROPIEDADES DE LA SECCIÓN DE ACERO: FY=37000 LBS PLG 2 (2603 KG/CM2)										
CAL	ESP. ACERO BASE		PROPIEDADES EFECTIVAS			PROPIEDADES SIN REDUCIR				
	PLG.	MM.	IX+	SX+	SX-	IX	SX SUP.	SX INF.	AREA	Y INF
			CM4/MT	CM3/MT	CM3/MT	CM4/MT	CM3/MT	CM3/MT	CM2/MT	CMS
24	0.0209	0.531	45.11	11.93	13.11	50.54	15.61	16.24	7.07	3.11
22	0.0299	0.759	69.54	19.22	20.66	72.31	22.32	23.23	10.12	3.11
20	0.0359	0.912	86.34	24.54	26.04	86.81	26.82	27.89	12.15	3.11
18	0.0478	1.214	114.63	35.25	36.61	114.63	35.4	36.83	15.47	3.11

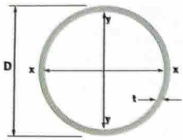
LOSACERO 3615



PROPIEDADES DE LA SECCIÓN						
CALIBRE	ESPESOR in	PESO kg/m ²	I _p cm ⁴ /cm	I _n cm ⁴ /cm	S _p cm ³ /cm	S _n cm ³ /cm
24	0.0209	6.02	13.71	16.76	5.95	6.35
22	0.0295	8.33	21.54	25.39	9.86	10.08
20	0.0358	10.02	27.67	31.09	13.16	13.02
18	0.0474	13.14	39.38	41.43	19.98	17.91

Galvateja





TUBERÍA

PARA USO MECÁNICO ASTM A-500

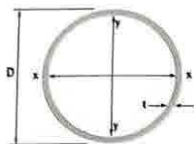
DIÁMETROS MENORES (OC)

CED No.	DIÁMETRO NOMINAL		DIÁMETRO EXTERIOR (D)		ESPESOR (T)		CALÍBRE	PESO		ÁREA	MOMENTO DE INERCIA	MÓDULO DE SECCIÓN	RADIO DE GIRO
	pulg.	mm.	pulg.	mm.	pulg.	mm.		kg/m	kg/pieza				
30	1/2"	13	0.840	21.34	0.075	1.905	14	0.91	5.46	1.163	0.55	0.519	0.69
	3/4"	19	1.050	26.67	0.075	1.905	14	1.16	6.96	1.482	1.14	0.857	0.878
	1"	25	1.315	33.40	0.075	1.905	14	1.56	9.36	1.885	2.35	1.405	1.116
	1 1/4"	32	1.660	42.16	0.090	2.286	13	2.35	14.10	2.864	5.71	2.709	1.412
	1 1/2"	38	1.900	48.26	0.090	2.286	13	2.71	16.26	3.302	8.75	3.624	1.627
	2"	51	2.375	60.33	0.105	2.667	12	3.96	23.76	4.831	20.12	6.670	2.041
	2 1/2"	64	2.875	73.03	0.105	2.667	12	4.84	29.04	6.967	42.58	11.662	2.472
	3"	76	3.500	88.90	0.120	3.048	11	6.75	40.50	8.551	78.65	17.695	3.033
	4"	102	4.500	114.30	0.120	3.048	11	8.74	52.44	11.084	171.24	29.962	3.93
	5"	127	5.000	127.00	0.125	3.175	11	9.69	58.14	12.351	236.87	37.303	4.379
	6 5/8"	168	6.625	168.30	0.188	4.780	7	19.23	115.38	24.528	820.30	97.495	5.783
	1/2"	13	0.840	21.34	0.090	2.286	13	1.07	6.42	1.368	0.63	0.590	0.678
PG*	3/4"	19	1.050	26.67	0.095	2.413	13	1.44	8.64	1.839	1.37	1.024	0.862
	1"	25	1.315	33.40	0.104	2.642	12	2.00	12.00	2.553	3.04	1.821	1.092
	1 1/4"	32	1.660	42.16	0.110	2.794	12	2.71	16.26	3.456	6.73	3.192	1.395
	1 1/2"	38	1.900	48.26	0.114	2.896	11	3.24	19.44	4.127	10.66	4.417	1.607
	2"	51	2.375	60.33	0.120	3.048	11	4.30	25.80	5.485	22.56	7.478	2.028
	2 1/2"	64	2.875	73.03	0.145	3.683	9	6.29	37.74	8.023	48.36	13.244	2.455
	3"	76	3.500	88.90	0.150	3.810	9	7.99	47.94	10.185	92.36	20.779	3.011
	4"	102	4.500	114.30	0.156	3.962	8	10.77	64.62	13.735	209.29	36.621	3.904
	5"	127	5.000	127.00	0.156	3.962	8	12.01	72.06	15.316	290.12	45.689	4.325
	6 1/4"	159	6.250	158.75	0.156	3.962	8	15.11	90.66	19.268	577.45	72.749	5.474
	6"	168	6.625	168.28	0.250	6.350		25.33	151.98	32.303	1060.33	126.024	5.729
	1/2"	13	0.840	21.34	0.109	2.769	12	1.27	7.62	1.615	0.71	0.667	0.664
40	3/4"	19	1.050	26.67	0.113	2.870	12	1.68	10.08	2.146	1.54	1.156	0.848
	1"	25	1.315	33.40	0.133	3.378	10	2.65	15.90	3.186	3.64	2.177	1.068
	1 1/4"	32	1.660	42.16	0.135	3.429	10	3.49	20.94	4.313	8.10	3.844	1.371
	1 1/2"	38	1.900	48.26	0.145	3.683	9	4.37	26.22	5.158	12.90	5.346	1.581
	2"	51	2.375	60.33	0.154	3.912	9	5.55	33.30	6.932	27.71	9.187	1.999
	2 1/2"	64	2.875	73.03	0.188	4.775		8.43	50.58	10.994	63.67	17.436	2.406
	3"	76	3.500	88.90	0.220	5.588	5	12.25	73.50	14.377	125.58	28.253	2.955
	4"	102	4.500	114.30	0.220	5.588	5	15.98	95.88	20.478	301.04	52.676	3.834
	5"	127	5.551	114.00	0.258	6.553		21.77	130.62	27.73	630.83	89.290	4.77
	6"	168	6.625	168.28	0.280	7.112		29.65	177.90	36.009	1171.37	139.220	5.704

PROPIEDADES MECÁNICAS ASTM A-500	GRADO A		GRADO B		GRADO C	
	lbs/pulg ²	kg/cm ²	lbs/pulg ²	kg/cm ²	lbs/pulg ²	kg/cm ²
Esfuerzo de ruptura mín.	45,000	3,164	58,000	4,078	62,000	4,359
Esfuerzo de fluencia mín.	33,000	2,320	42,000	2,953	46,000	3,234

PG* : Tubo de pared gruesa.

Nota: La tubería para uso mecánico se surte como estándar en tramos de 6.00 mts.



TUBERÍA

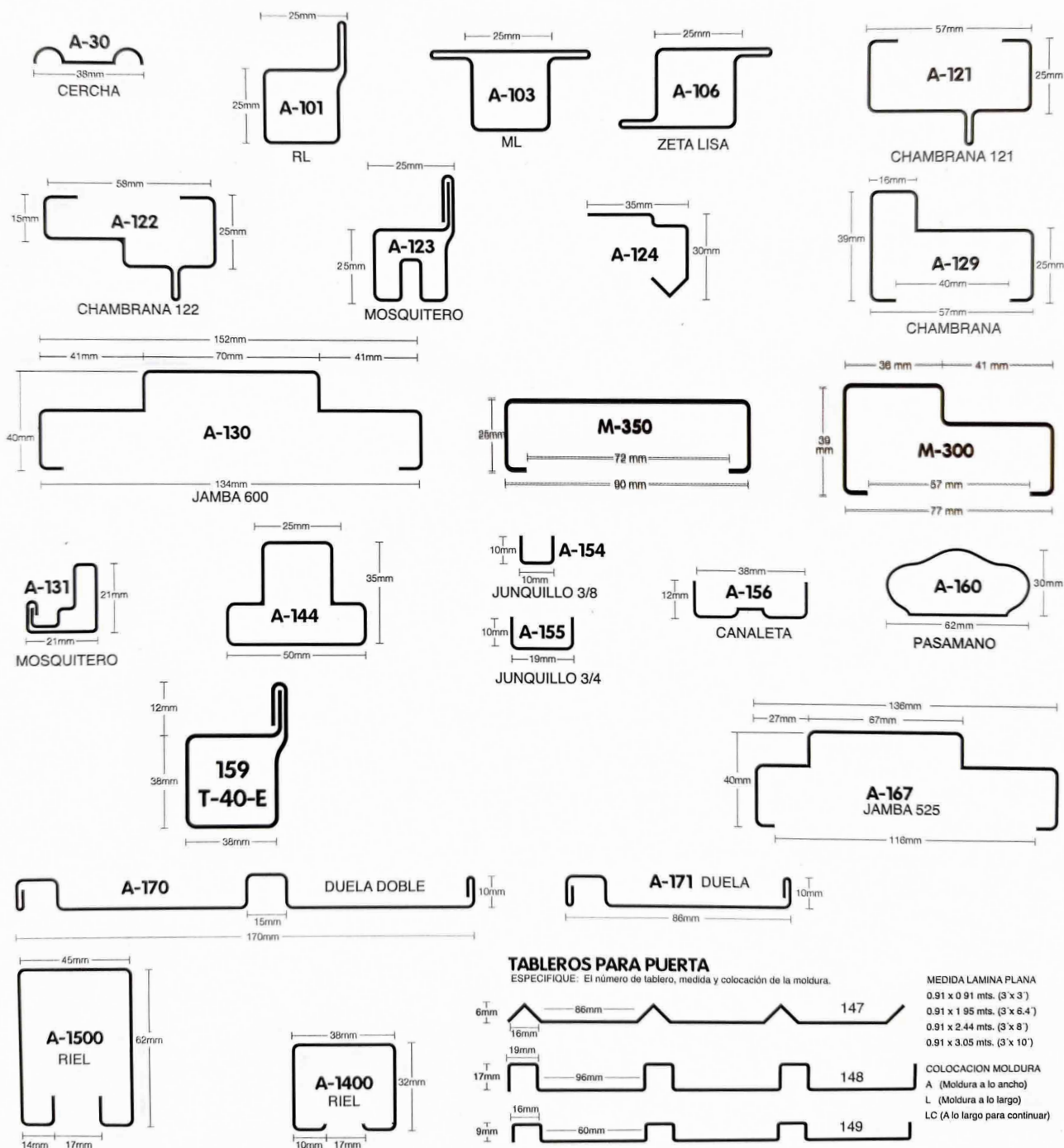
PARA USO MECÁNICO ASTM A-500

(DIÁMETROS MAYORES) OC

DESCRIPCIÓN		DIÁMETRO EXTERIOR	ESPESOR DE PARED	PESO EXTREMO LISO		DIÁMETRO INTERIOR	ÁREA		MOMENTO DE INERCIA	MÓDULO DE SECCIÓN	RADIO DE GIRO
Tamaño nominal	Pared	D (pulg)a	t (pulg)a	Wpe (lb/pie)	(kg/m)	d (pulg)	pulg²	cm²	cm⁴	cm³	cm
6 5/8		6.625	0.312	21.04	31.31	6.001	6.19	39.92	1283.93	152.60	5.68
6 5/8		6.625	0.375	25.03	37.25	5.875	7.36	47.50	1499.18	178.18	5.62
6 5/8	80 XE	6.625	0.432	28.57	42.52	5.761	8.40	54.23	1682.35	199.95	5.57
6 5/8		6.625	0.500	32.71	48.68	5.625	9.62	62.07	1887.09	224.29	5.52
8 5/8		8.625	0.188	16.94	25.21	8.249	4.98	32.15	1843.14	168.27	7.58
8 5/8	20	8.625	0.250	22.36	33.28	8.125	6.58	42.44	2398.29	218.95	7.52
8 5/8	30	8.625	0.277	24.70	36.76	8.071	7.26	46.87	2632.24	240.31	7.50
8 5/8	40 E	8.625	0.322	28.55	42.49	7.981	8.40	54.19	3011.86	274.96	7.46
8 5/8		8.625	0.375	33.04	49.17	7.875	9.72	62.71	3442.79	314.30	7.42
8 5/8	80 XE	8.625	0.500	43.39	64.57	7.625	12.76	82.34	4392.41	401.00	7.31
10 3/4	20	10.750	0.250	28.04	41.73	10.250	8.25	53.20	4724.71	346.07	9.43
10 3/4	30	10.750	0.307	34.24	50.96	10.136	10.07	64.98	5709.66	418.21	9.38
10 3/4	40 E	10.750	0.365	40.48	60.24	10.020	11.91	76.83	6678.35	489.17	9.33
10 3/4	60 XE	10.750	0.500	54.74	81.46	9.750	16.10	103.88	8806.33	645.03	9.22
12 3/4		12.750	0.188	25.22	37.53	12.374	7.42	47.87	6082.08	375.61	11.28
12 3/4	20	12.750	0.250	33.38	49.68	12.250	9.82	63.34	7970.12	492.21	11.23
12 3/4	30	12.750	0.330	43.77	65.14	12.090	12.88	83.07	10323.01	637.52	11.16
12 3/4		12.750	0.344	45.58	67.83	12.062	13.41	86.50	10725.28	662.36	11.15
12 3/4	E	12.750	0.375	49.56	73.75	12.000	14.58	94.06	11606.10	716.76	11.12
12 3/4	40	12.750	0.406	53.52	79.65	11.938	15.74	101.58	12473.38	770.32	11.09
12 3/4	XE	12.750	0.500	65.42	97.36	11.750	19.24	124.14	15021.81	927.70	11.01
14		14.000	0.188	27.73	41.27	13.624	8.16	52.63	8084.05	454.67	12.40
14	10	14.000	0.250	36.71	54.63	13.500	10.80	69.67	10607.49	596.60	12.35
14	20	14.000	0.312	45.61	67.88	13.376	13.42	86.56	13062.34	734.66	12.30
14	30 E	14.000	0.375	54.57	81.21	13.250	16.05	103.56	15487.83	871.08	12.24
14	40	14.000	0.438	63.44	94.41	13.124	18.66	120.40	17845.10	1003.66	12.19
14	XE	14.000	0.500	72.09	107.28	13.000	21.21	136.81	20099.61	1130.46	12.13
16		16.000	0.188	31.75	47.25	15.624	9.34	60.25	12128.32	596.87	14.20
16	10	16.000	0.250	42.05	62.58	15.500	12.37	79.81	15940.87	784.49	14.15
16	20	16.000	0.312	52.27	77.79	15.376	15.38	99.21	19663.01	967.67	14.09
16	30 E	16.000	0.375	62.58	93.13	15.250	18.41	118.76	23354.06	1149.31	14.04
16	40 XE	16.000	0.500	82.77	123.18	15.000	24.35	157.08	30411.49	1496.63	13.93
18		18.000	0.188	35.76	53.22	17.624	10.52	67.87	17336.65	758.38	16.00
18	10	18.000	0.250	47.39	70.52	17.500	13.94	89.94	22816.14	998.08	15.94
18	20	18.000	0.312	58.94	87.71	17.376	17.34	111.85	28180.38	1232.74	15.89
18	E	18.000	0.375	70.59	105.05	17.250	20.76	133.96	33514.76	1466.09	15.83
18	30	18.000	0.438	82.15	122.25	17.124	24.17	155.91	38733.52	1694.38	15.78
18	XE	18.000	0.500	93.45	139.07	17.000	27.49	177.35	43758.20	1914.18	15.72
18	40	18.000	0.562	104.67	155.77	16.876	30.79	198.63	48674.12	2129.23	15.67
20	10	20.000	0.250	52.73	78.47	19.500	15.51	100.07	31429.09	1237.37	17.74
20		20.000	0.312	65.60	97.62	19.376	19.30	124.50	38858.80	1529.87	17.68
20	20 E	20.000	0.375	78.60	116.97	19.250	23.12	149.16	46263.63	1821.40	17.63
20	XE	20.000	0.500	104.13	154.96	19.000	30.63	197.62	60531.33	2383.12	17.52
20		20.000	0.562	116.67	173.63	18.876	34.32	221.41	67402.32	2653.63	17.46
22		22.000	0.250	58.07	86.42	21.500	17.08	110.21	41975.52	1502.35	19.53
22	E	22.000	0.375	86.61	128.89	21.250	25.48	164.36	61894.37	2215.26	19.42
22	XE	22.000	0.500	114.81	170.86	21.000	33.77	217.88	81122.46	2903.45	19.31
22		22.000	0.562	128.67	191.48	20.876	37.85	244.20	90408.32	3235.80	19.26
22		22.000	0.625	142.68	212.33	20.750	41.97	270.77	99675.97	3567.50	19.20
24	10	24.000	0.250	63.41	94.37	23.500	18.65	120.34	54651.23	1793.02	21.33
24		24.000	0.312	78.93	117.46	23.376	23.22	149.80	67676.21	2220.35	21.27
24	20 E	24.000	0.375	94.62	140.81	23.250	27.83	179.56	80700.66	2647.66	21.22
24	XE	24.000	0.500	125.49	186.75	23.000	36.91	238.15	105923.20	3475.17	21.11
24	30	24.000	0.562	140.68	209.36	22.876	41.38	266.98	118132.26	3875.73	21.05
24		24.000	0.625	156.03	232.20	22.750	45.90	296.11	130336.54	4276.13	21.00
24	40	24.000	0.668	171.29	254.91	22.624	50.39	325.08	142339.71	4669.94	20.94

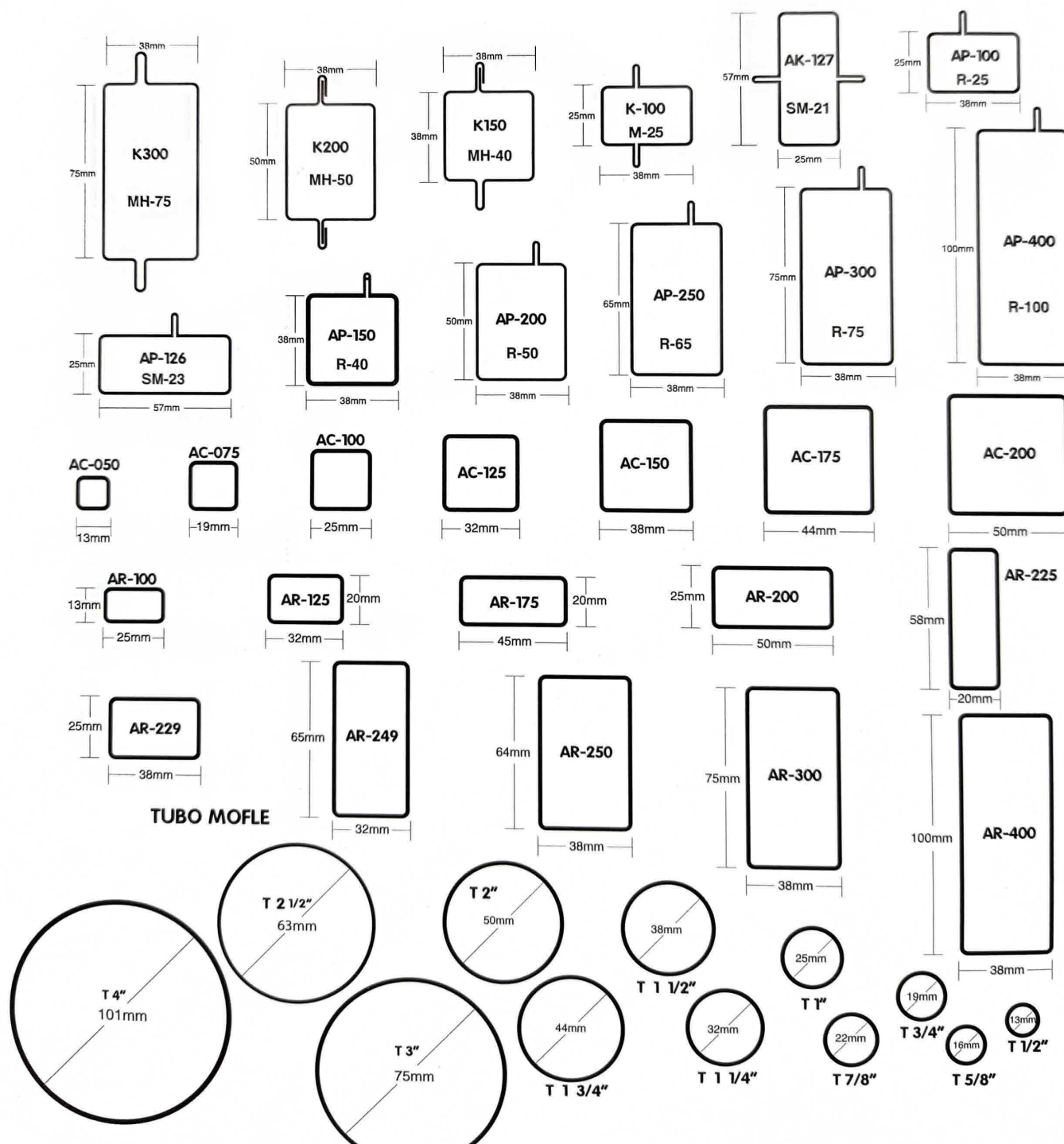
PERFÍL

TUBULAR 6 MTS.



PERFÍL

TUBULAR 6 MTS.



PERFÍL

TUBULAR 6 MTS.

PERFILES TUBULARES 6.00 mts.

Perfil	Clave	Cal	kg/m	kg/pieza
Cercha	A-30	18	0.458	2.75
RL	A-101	18	1.220	7.32
RL	A-101	20	0.915	5.49
ML	A-103	18	1.435	8.61
ML	A-103	20	1.077	6.46
Zeta	A-106	18	1.357	8.14
Zeta	A-106	20	1.010	6.06
Chambrana	A-121	18	1.272	7.63
Chambrana	A-121	20	0.953	5.72
Chambrana	A-122	18	1.298	7.79
Chambrana	A-122	20	0.973	5.84
Mosquitero	A-123	18	1.387	8.32
Mosquitero	A-123	20	1.040	6.24
	A-124	18	0.673	4.04
	A-129(X)	18	1.320	7.26
	A-129(X)	20	0.989	5.44
Jamba 600	A-130(X)	20	1.693	9.31
	M-300(X)	18	1.600	8.80
	M-300(X)	20	1.170	6.44
	M-350(X)	20	1.070	5.89
Mosquitero	A-131	20	0.667	4.00
	A-144	18	1.467	8.80
Junquillo	A-154	18	0.250	1.50
Junquillo	A-154	20	0.190	1.14
Junquillo	A-155	20	0.300	1.80
Canaleta	A-156	20	0.400	2.40
T-I-40	157	18	2.000	12.00
T-I-40	157	20	1.500	9.00
T-D-40	158	18	2.000	12.00
T-D-40	158	20	1.500	9.00
T-40-E	159	18	1.800	10.80
T-40-E	159	20	1.400	8.40

Perfil	Clave	Cal	kg/m	kg/pieza
Pasamano	A-160	18	1.488	8.93
Pasamano	A-160	20	1.117	6.70
Jamba 525	A-167 (X)	18	2.133	11.73
Jamba 525	A-167 (X)	20	1.600	8.80
Duela doble	A-170 (X)	20	1.558	8.57
Duela sencilla	A-171	20	0.878	5.27
Riel	A-1400	18	1.220	7.32
Riel	A-1500	14	3.000	18.00
Riel	A-1500	16	2.500	15.00
MH-25	AK-100	18	1.580	9.48
MH-25	AK-100	20	1.160	6.96
SM-21	AK-127	18	1.878	11.27
SM-21	AK-127	20	1.445	8.67
MH-40	AK-150	18	1.722	10.33
MH-40	AK-150	20	1.347	8.08
MH-50	*K200	18	2.300	7.02
MH-50	*K200	20	1.700	5.19
MH-75	K-300	18	2.600	15.60
MH-75	K-300	20	1.900	11.40
R-25	AP-100	18	1.330	7.98
R-25	AP-100	20	1.010	6.06
SM-23	AP-126	18	1.737	10.42
SM-23	AP-126	20	1.313	7.88
R-40	AP-150	18	1.615	9.69
R-40	AP-150	20	1.233	7.40
R-50	AP-200	18	1.855	11.13
R-50	AP-200	20	1.405	8.43
R-65	AP-250	18	2.080	12.48
R-65	AP-250	20	1.580	9.48
R-75	AP-300	18	2.352	14.11
R-75	AP-300	20	1.735	10.41
R-100	AP-400	18	2.800	16.80
R-100	AP-400	20	2.100	12.60

TABLEROS

Medida		Calibre	kg/pieza
Ancho	Largo		
3 (0.91)	3 (0.91)	20	6.06
3 (0.91)	6 (1.83)	20	12.12
3 (0.91)	8 (2.44)	20	16.18
3 (0.91)	10 (3.05)	20	20.21
4 (1.22)	3 (0.91)	20	8.08
4 (1.22)	4 (1.22)	20	10.78
4 (1.22)	6 (1.83)	20	16.17
4 (1.22)	8 (2.44)	20	21.56
4 (1.22)	10 (3.05)	20	26.95

Longitud estandar: 6.00 mts.
Pesos teóricos con variación de +- 5%
(X) Perfiles a 5.5 mts.
* Perfiles a 3.05 mts.

PERFÍL TUBULAR 6 MTS.

CUADRADOS

Perfil	Calibre	kg/m	kg/pieza
AC-050	18	0.468	2.81
AC-050	20	0.352	2.11
AC-075	18	0.667	4.00
AC-075	20	0.525	3.15
AC-100	16	1.170	7.02
AC-100	18	0.933	5.60
AC-100	20	0.717	4.30
AC-125	16	1.480	8.88
AC-125	18	1.210	7.26
AC-125	20	0.910	5.46
AC-150	16	1.790	10.74
AC-150	18	1.467	8.80
AC-150	20	1.098	6.59
AC-175	18	1.708	10.25
AC-175	20	1.282	7.69
AC-200	16	2.387	14.32
AC-200	18	1.952	11.71
AC-200	20	1.463	8.78

TUBO MOFLE

Perfil	Calibre	kg/m	kg/pieza	Perfil	Calibre	kg/m	kg/pieza
T-1/2	18	0.390	2.34	T-1 1/2	16	1.428	8.57
T-1/2	20	0.293	1.76	T-1 1/2	18	1.172	7.03
T-5/8	16	0.592	3.55	T-1 1/2	20	0.878	5.27
T-5/8	18	0.488	2.93	T-1 3/4	16	1.673	10.04
T-5/8	20	0.358	2.15	T-1 3/4	18	1.372	8.23
T-3/4	16	0.712	4.27	T-1 3/4	20	1.028	6.17
T-3/4	18	0.585	3.51	T-2	16	1.895	11.37
T-3/4	20	0.417	2.50	T-2	18	1.552	9.31
T-7/8	16	0.832	4.99	T-2	20	1.163	6.98
T-7/8	18	0.667	4.00	T-2 1/2	16	2.356	14.14
T-7/8	20	0.483	2.90	T-2 1/2	18	1.895	11.37
T-1	16	0.950	5.70	T-2 1/2	20	1.428	8.57
T-1	18	0.717	4.30	T-3	16	2.917	17.50
T-1	20	0.585	3.51	T-3	18	2.333	14.00
T-1 1/4	16	1.165	6.99	T-4	16	3.700	22.20
T-1 1/4	18	0.947	5.68	T-4	18	3.000	18.00
T-1 1/4	20	0.710	4.26				

RECTANGULARES

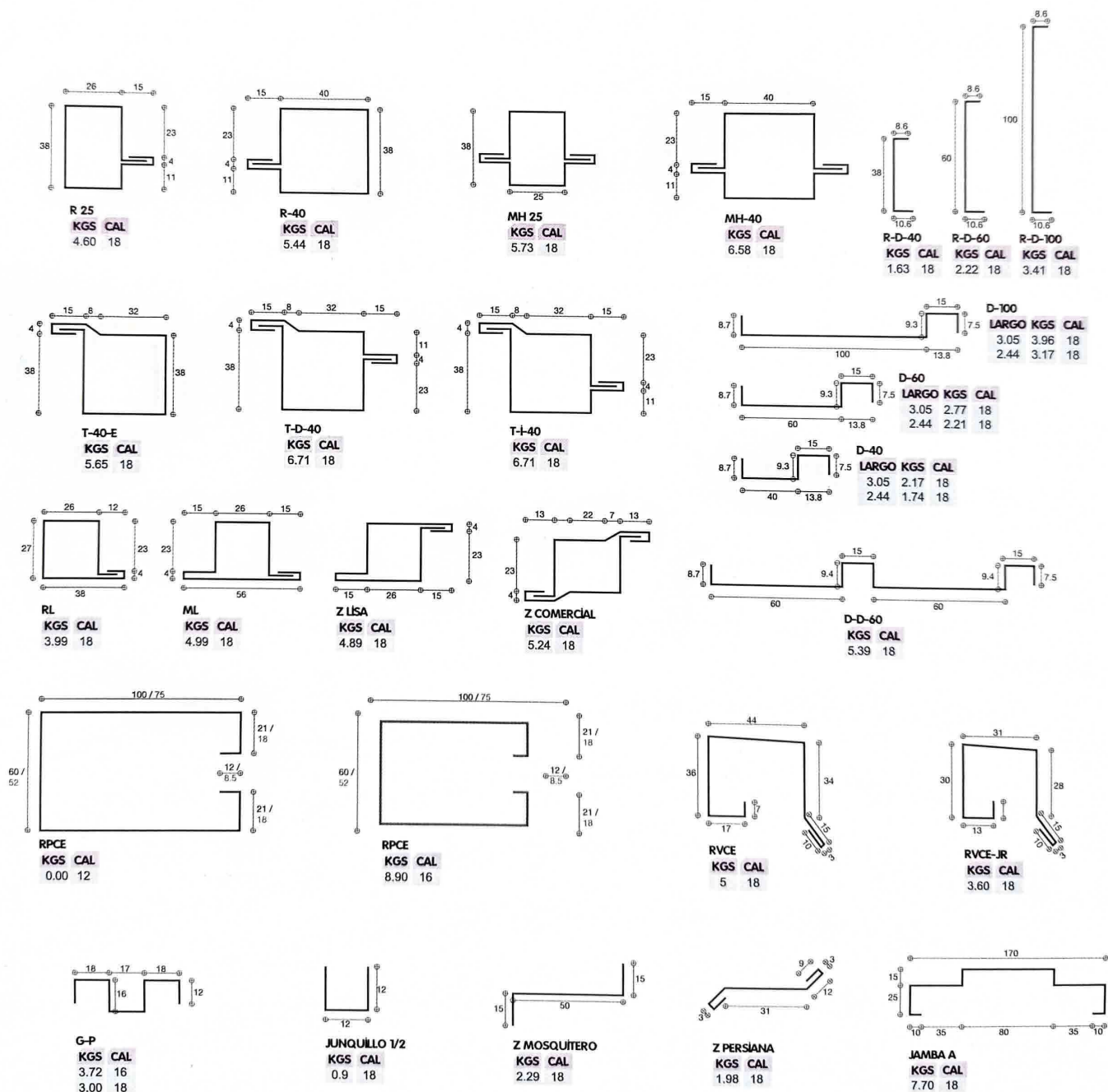
Perfil	Calibre	kg/m	kg/pieza
AR-100	18	0.667	4.00
AR-100	20	0.525	3.15
AR-125	18	0.957	5.74
AR-125	20	0.717	4.30
AR-175	18	1.220	7.32
AR-175	20	0.915	5.49
AR-200	18	1.467	8.80
AR-200	20	1.105	6.63
AR-225	18	1.488	8.93
AR-225	20	1.097	6.58
AR-229	18	1.185	7.11
AR-229	20	0.888	5.33
AR-249	18	1.855	11.13
AR-249	20	1.390	8.34
AR-250	18	1.952	11.71
AR-250	20	1.463	8.78
AR-300	18	2.118	12.71
AR-300	20	1.603	9.62
AR-400	18	2.700	16.20
AR-400	20	2.000	12.00

PTR LIVIANO

medida	Calibre	kg/m	kg/pieza
3/4	14	1.078	6.47
1	14	1.435	8.61
1 1/4	14	1.840	11.04
1 1/2	14	2.197	13.18
2	14	2.990	17.94
2 1/2	14	3.820	23.3
3	14	4.610	28.1
4	14	6.190	37.75
2 X 1	14	2.198	13.19
1 1/4 X 2 1/2	14	2.797	16.78
1 1/2 X 2 1/2	14	2.990	17.94
1 1/2 X 3	14	3.363	20.18
1 1/2 X 4	14	4.112	24.64
3 X 2	14	3.737	22.42
4 X 2	14	4.502	27.01
4 X 3	14	5.248	31.49
5 X 2	14	5.366	32.20
6 X 2	14	6.123	36.74

PERFÍL

TUBULAR 3.05 MTS.





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