

PERFILES ESTRUCTURALES ABIERTOS M/MM Y C/CC REFORZADO

Negros y Galvanizados

Descripción:

alternativa industrial para facilitar la construcción de sistemas estructurales metálicos de alta resistencia, de manera práctica, rápida y sencilla. Aplicado para su utilización en columnas, vigas y viguetas o en conjunto con otros elementos.

Usos:

Permite diseñar y construir estructuras más livianas y resistentes y por consiguiente más económicas. Por su geometría especial garantiza la eficiencia al 100% de la sección

Los perfiles abiertos M y C REFORZADO, o cerrados MM y CC CO, son una alternativa industrial para facilitar la construcción de sistemas estructurales metálicos de alta resistencia, de manera práctica, rápida y sencilla. Aplicando para su utilización en columnas vigas y viguetas en conjunto con otros elementos de línea estructural.

Estos perfiles son fabricados con acero de calidad estructural, laminado en caliente (HR) con bajo contenido de carbono, alta soldabilidad y ductibilidad, garantizando un esfuerzo de fluencia de 42.000 psi (2.952kg/cm²) cumpliendo con la norma ASTM A 1011 G42. Formado en frío mediante perfiladora de rodillos conformadores de alta capacidad para espesores que oscilan entre 1.50 y 4.00 mm.

TOLERANCIA

Longitud: -0+10mm Dimensiones exteriores: +/- 3mm
Espesor: +/- 5% Cuadratura: +/- 3 grados

ESPESOR DE PARED

+/- 10% del espesor nominal

DIMENSIONES EXTERIORES

A; B; C; H= +/- 13/128 (2.60mm) F= +/- 13/128 (2.60mm)

CUADRATURA

(TODOS LOS LADOS): +/- 2°

RECTITUD

1.000m a 4.000m 4.000m m (máximo)
4.000m a 8.000m 10.00 mm (máximo)
>8.00m 16.00mm (máximo)

MATERIAL

Acero estructural al carbono laminado con caliente calidades: AISI/SAE 1015 Y ASTM A 1011G42.

PROPIEDADES MECÁNICAS

(Fy)= esfuerzo fluencia = 42.000 psi/2953kg/cm² min

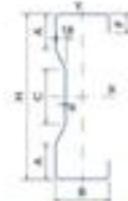
(Fu)= esfuerzo de tensión = 55.000 psi/3866kg/cm² min

Elongación en 2° =20%

CONCRE

LA NUEVA TECNOLOGÍA DEL ACERO

Aceros



PERFIL ESTRUCTURAL M

| TIPO | ESPECIFICACIONES | | | | | | | EJE X-X | | | EJE Y-Y | | | | PANDEO FLEXO-TORSIONAL | | |
|------|------------------|--------|--------|--------|--------|--------|-------------|-------------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|-----------------------------------|---------------------|------------------------|----------------------|-----------------------------------|
| | H (mm) | B (mm) | A (mm) | C (mm) | F (mm) | e (mm) | PESO (kg/m) | AREA (cm ²) | I _x (cm ⁴) | S _x (cm ³) | r _x (cm) | I _y (cm ⁴) | S _y (cm ³) | r _y (cm) | x (cm) | J (cm ⁶) | C _w (cm ⁶) |
| M | 150 | 75 | 40 | 6 | 20 | 1.5 | 4.30 | 5.22 | 192.87 | 25.32 | 5.08 | 38.60 | 14.173 | 2.72 | 2.72 | 0.0392 | 40.70 |
| | | | 40 | 6 | 20 | 2.0 | 5.34 | 6.93 | 255.82 | 33.44 | 5.08 | 50.93 | 18.56 | 2.71 | 2.74 | 0.0923 | 53.73 |
| | | | 40 | 6 | 20 | 2.5 | 6.75 | 8.61 | 318.10 | 41.40 | 5.08 | 62.97 | 22.79 | 2.70 | 2.76 | 0.1794 | 66.39 |
| | | | 40 | 6 | 20 | 3.0 | 8.07 | 10.28 | 383.17 | 49.23 | 5.08 | 74.74 | 26.86 | 2.70 | 2.78 | 0.3086 | 78.70 |
| M | 200 | 75 | 40 | 50 | 23 | 1.5 | 4.83 | 5.90 | 307.89 | 30.53 | 7.89 | 39.03 | 14.86 | 2.57 | 2.62 | 0.0442 | 42.85 |
| | | | 40 | 50 | 23 | 2.0 | 6.15 | 7.83 | 488.14 | 48.32 | 7.89 | 51.49 | 19.45 | 2.56 | 2.64 | 0.1044 | 56.37 |
| | | | 40 | 50 | 25 | 2.5 | 7.85 | 9.74 | 637.53 | 59.912 | 7.89 | 63.87 | 23.88 | 2.55 | 2.66 | 0.2030 | 69.77 |
| | | | 40 | 50 | 25 | 3.0 | 9.13 | 11.65 | 725.85 | 71.32 | 7.90 | 75.57 | 28.13 | 2.55 | 2.69 | 0.3494 | 82.81 |
| M | 250 | 50 | 65 | 50 | 25 | 2.0 | 6.38 | 8.07 | 690.98 | 54.715 | 9.25 | 24.52 | 14.373 | 1.74 | 1.71 | 0.1076 | 75.33 |
| | | | 65 | 50 | 25 | 2.5 | 7.69 | 10.05 | 850.84 | 67.49 | 9.20 | 30.43 | 17.808 | 1.74 | 1.73 | 0.2094 | 93.66 |
| | | | 65 | 50 | 25 | 3.0 | 9.20 | 12.02 | 1017.63 | 80.471 | 9.20 | 36.25 | 20.711 | 1.74 | 1.75 | 0.3607 | 111.74 |
| | | | 65 | 50 | 25 | 3.5 | 10.70 | 13.68 | 1183.21 | 93.282 | 9.20 | 41.88 | 23.887 | 1.73 | 1.77 | 0.5709 | 129.52 |
| M | 250 | 75 | 65 | 50 | 25 | 2.0 | 7.12 | 8.14 | 796.81 | 60.078 | 9.64 | 56.56 | 22.933 | 2.64 | 2.47 | 0.0879 | 115.19 |
| | | | 65 | 50 | 25 | 2.5 | 8.87 | 11.30 | 1050.27 | 83.153 | 9.64 | 78.49 | 31.388 | 2.64 | 2.50 | 0.2355 | 159.83 |
| | | | 65 | 50 | 25 | 3.0 | 10.62 | 13.52 | 1256.73 | 99.219 | 9.64 | 93.57 | 37.105 | 2.63 | 2.52 | 0.4057 | 190.84 |
| | | | 65 | 50 | 25 | 3.5 | 12.35 | 15.73 | 1461.99 | 115.099 | 9.64 | 108.44 | 42.646 | 2.63 | 2.54 | 0.6424 | 221.45 |
| M | 250 | 100 | 65 | 50 | 25 | 2.0 | 7.90 | 9.96 | 982.93 | 78.017 | 9.93 | 123.86 | 37.196 | 3.53 | 3.33 | 0.1329 | 197.85 |
| | | | 65 | 50 | 25 | 2.5 | 9.85 | 12.55 | 1250.71 | 98.853 | 9.98 | 157.74 | 46.833 | 3.55 | 3.37 | 0.2615 | 250.91 |
| | | | 65 | 50 | 25 | 3.0 | 11.79 | 15.02 | 1497.08 | 118.012 | 9.98 | 188.20 | 55.535 | 3.54 | 3.39 | 0.4507 | 299.76 |
| | | | 65 | 50 | 25 | 3.5 | 13.72 | 17.48 | 1742.19 | 136.971 | 9.98 | 218.29 | 64.025 | 3.53 | 3.41 | 0.7139 | 348.04 |
| M | 300 | 50 | 65 | 100 | 25 | 2.0 | 6.95 | 8.90 | 1034.85 | 68.58 | 10.78 | 23.26 | 13.592 | 1.62 | 1.71 | 0.1187 | 88.95 |
| | | | 65 | 100 | 25 | 2.5 | 8.65 | 11.12 | 1292.23 | 85.488 | 10.78 | 29.02 | 16.718 | 1.62 | 1.74 | 0.2316 | 110.92 |
| | | | 65 | 100 | 25 | 3.0 | 10.30 | 13.33 | 1548.08 | 102.249 | 10.78 | 34.75 | 19.748 | 1.62 | 1.76 | 0.3998 | 132.78 |
| | | | 65 | 100 | 25 | 3.5 | 12.02 | 15.29 | 1731.00 | 117.70 | 10.64 | 34.05 | 19.45 | 1.49 | 1.75 | 0.6132 | 148.77 |
| M | 300 | 75 | 65 | 100 | 25 | 2.0 | 7.75 | 9.90 | 1468.35 | 83.00 | 11.20 | 57.00 | 23.70 | 2.40 | 2.41 | 0.1309 | 137.42 |
| | | | 65 | 100 | 25 | 2.5 | 9.60 | 12.25 | 1835.50 | 102.50 | 11.20 | 69.04 | 28.68 | 2.37 | 2.41 | 0.2533 | 165.29 |
| | | | 65 | 100 | 25 | 3.0 | 11.45 | 14.60 | 2181.00 | 121.00 | 11.20 | 80.23 | 33.29 | 2.34 | 2.41 | 0.4338 | 190.69 |
| | | | 65 | 100 | 25 | 3.5 | 13.11 | 16.72 | 2466.00 | 136.33 | 11.00 | 90.60 | 37.56 | 2.33 | 2.41 | 0.6827 | 213.71 |
| M | 300 | 100 | 65 | 100 | 25 | 2.0 | 8.55 | 10.88 | 1362.68 | 93.79 | 11.31 | 120.17 | 38.58 | 3.36 | 3.12 | 0.1422 | 169.23 |
| | | | 65 | 100 | 25 | 2.5 | 10.60 | 13.50 | 1679.99 | 115.85 | 11.27 | 146.42 | 47.02 | 3.32 | 3.11 | 0.2754 | 202.86 |
| | | | 65 | 100 | 35 | 3.0 | 13.10 | 16.70 | 2232.00 | 149.00 | 11.60 | 193.29 | 56.35 | 3.40 | 3.43 | 0.4968 | 249.57 |
| | | | 65 | 100 | 35 | 3.5 | 15.03 | 19.17 | 2654.81 | 166.98 | 11.50 | 220.16 | 64.19 | 3.39 | 3.43 | 0.7828 | 299.49 |
| M | 350 | 50 | 90 | 100 | 25 | 2.0 | 7.75 | 9.90 | 1502.50 | 86.00 | 12.30 | 23.86 | 15.32 | 1.66 | 1.66 | 0.1304 | 141.39 |
| | | | 90 | 100 | 25 | 2.5 | 9.60 | 12.25 | 1847.50 | 105.50 | 12.30 | 29.03 | 18.50 | 1.64 | 1.67 | 0.2533 | 171.95 |
| | | | 90 | 100 | 25 | 3.0 | 11.45 | 14.60 | 2181.00 | 124.50 | 12.20 | 33.52 | 21.27 | 1.62 | 1.68 | 0.4338 | 199.53 |
| | | | 90 | 100 | 25 | 3.5 | 13.11 | 16.72 | 2498.75 | 139.50 | 12.10 | 37.62 | 23.77 | 1.60 | 1.68 | 0.6827 | 2249.24 |
| M | 350 | 75 | 90 | 100 | 25 | 2.0 | 8.55 | 10.88 | 1805.00 | 103.00 | 12.90 | 61.83 | 28.21 | 2.38 | 2.19 | 0.1442 | 195.86 |
| | | | 90 | 100 | 25 | 2.5 | 10.60 | 13.50 | 2225.00 | 127.00 | 12.80 | 74.95 | 34.15 | 2.36 | 2.20 | 0.2794 | 236.91 |
| | | | 90 | 100 | 25 | 3.0 | 12.65 | 16.10 | 2632.50 | 150.50 | 12.80 | 87.18 | 39.66 | 2.33 | 2.20 | 0.4788 | 274.78 |
| | | | 90 | 100 | 25 | 3.5 | 14.48 | 18.34 | 3175.39 | 168.95 | 12.70 | 98.55 | 44.80 | 2.17 | 2.20 | 0.7542 | 309.67 |
| M | 350 | 100 | 90 | 100 | 25 | 4.0 | 16.60 | 21.15 | 3410.50 | 195.00 | 12.70 | 109.07 | 49.51 | 2.27 | 2.20 | 1.1166 | 341.69 |
| | | | 90 | 100 | 25 | 2.0 | 9.30 | 11.90 | 2188.00 | 120.50 | 13.30 | 125.41 | 42.83 | 3.25 | 2.92 | 0.1571 | 204.35 |
| | | | 90 | 100 | 25 | 2.5 | 11.60 | 14.75 | 2602.50 | 148.50 | 13.30 | 154.12 | 52.65 | 3.23 | 2.93 | 0.3054 | 320.59 |
| | | | 90 | 100 | 35 | 3.0 | 14.30 | 18.20 | 3210.00 | 183.50 | 13.30 | 208.09 | 65.91 | 3.38 | 3.16 | 0.5418 | 701.20 |
| M | 400 | 75 | 90 | 100 | 35 | 3.5 | 16.41 | 20.62 | 3554.59 | 206.65 | 13.10 | 237.17 | 75.10 | 3.37 | 3.16 | 0.8542 | 790.32 |
| | | | 90 | 100 | 35 | 4.0 | 18.80 | 23.85 | 4177.50 | 238.50 | 13.20 | 264.73 | 83.80 | 3.32 | 3.16 | 1.2659 | 871.99 |
| | | | 90 | 150 | 25 | 3.0 | 13.80 | 17.60 | 3658.50 | 183.00 | 14.40 | 93.28 | 44.87 | 2.30 | 2.08 | 0.5760 | 567.61 |
| | | | 90 | 150 | 25 | 3.5 | 15.97 | 20.36 | 4140.68 | 208.83 | 14.30 | 98.55 | 44.37 | 2.20 | 2.22 | 0.8314 | 439.07 |
| M | 400 | 100 | 90 | 150 | 25 | 4.0 | 18.20 | 23.15 | 4745.00 | 237.50 | 14.30 | 109.10 | 49.03 | 2.17 | 2.23 | 1.2318 | 488.20 |
| | | | 90 | 150 | 35 | 3.0 | 15.45 | 19.70 | 4423.00 | 221.00 | 15.00 | 208.86 | 67.48 | 3.26 | 3.10 | 0.5904 | 791.24 |
| | | | 90 | 150 | 35 | 3.5 | 17.90 | 22.81 | 5016.70 | 252.80 | 14.90 | 238.03 | 76.86 | 3.23 | 3.10 | 0.9314 | 894.52 |
| | | | 90 | 150 | 35 | 4.0 | 20.40 | 25.95 | 5784.50 | 288.00 | 14.90 | 285.67 | 85.73 | 3.20 | 3.10 | 1.3811 | 990.04 |
| M | 450 | 75 | 115 | 150 | 25 | 3.0 | 15.00 | 19.10 | 4904.00 | 216.00 | 16.00 | 93.28 | 44.87 | 2.21 | 2.08 | 0.5760 | 567.61 |
| | | | 115 | 150 | 25 | 3.5 | 17.45 | 22.25 | 5690.00 | 252.10 | 16.00 | 105.50 | 50.65 | 2.18 | 2.08 | 0.9086 | 646.34 |
| | | | 115 | 150 | 25 | 4.0 | 19.75 | 25.15 | 6377.50 | 283.50 | 15.90 | 116.96 | 55.96 | 2.18 | 2.09 | 1.3470 | 720.75 |
| M | 450 | 100 | 115 | 150 | 35 | 3.0 | 16.65 | 21.20 | 5681.50 | 261.50 | 16.70 | 220.44 | 75.88 | 3.22 | 2.91 | 0.6390 | 1035.40 |
| | | | 115 | 150 | 35 | 3.5 | 19.38 | 24.70 | 6832.25 | 302.80 | 16.60 | 251.33 | 86.48 | 3.19 | 2.91 | 1.0065 | 1174.90 |
| | | | 115 | 150 | 35 | 4.0 | 21.95 | 27.95 | 7876.00 | 341.00 | 16.60 | 280.83 | 96.47 | 3.17 | 2.91 | 1.4953 | 1305.40 |

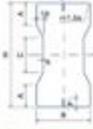
Los perfiles de sección abierta cumplen con la norma NTC 5000, ASTM A-1011 Grado 50. Para espesores mayores o iguales a 2.50mm Esfuerzo de Fluencia mínimo F_y=3.500 kg/cm² (50.000 psi) (250 Mpa) F_u=4.300 kg/cm² (60.000 psi) (437 Mpa). Para espesores menores o iguales a 1.50mm Esfuerzo de Fluencia F_y=2.530 kg/cm² (36.000 psi) (283 Mpa) F_u=3.890 kg/cm² (55.000 psi) (287 Mpa). Elongación 2" del 21%.



CONCRE

LA NUEVA TECNOLOGÍA DEL ACERO

Aceros



| TIPO | ESPECIFICACIONES | | | PESO (kg/m) | AREA (cm ²) | EJE X-X | | | | EJE Y-Y | | |
|------|------------------|-----------|-----------|----------------|----------------------------|--------------------------------------|--------------------------------------|------------------------|--------------------------------------|--------------------------------------|------------------------|--|
| | H (mm) | B (mm) | t (mm) | | | I _x (cm ⁴) | S _x (cm ³) | r _x (cm) | I _y (cm ⁴) | S _y (cm ³) | r _y (cm) | |
| MM | 150 | 150 | 1.5 | 8.19 | 10.45 | 385.75 | 50.64 | 6.08 | 330.72 | 44.10 | 5.63 | |
| | | | 2.0 | 10.89 | 13.85 | 511.65 | 66.88 | 6.08 | 442.21 | 58.96 | 5.65 | |
| | | | 2.5 | 13.51 | 17.22 | 636.20 | 82.79 | 6.08 | 554.15 | 73.89 | 5.67 | |
| | | | 3.0 | 16.14 | 20.56 | 760.35 | 98.40 | 6.08 | 667.30 | 88.95 | 5.70 | |
| MM | 200 | 150 | 1.5 | 9.26 | 11.82 | 735.38 | 73.06 | 7.89 | 375.28 | 50.10 | 5.64 | |
| | | | 2.0 | 12.30 | 15.66 | 976.28 | 96.64 | 7.90 | 502.58 | 67.06 | 5.67 | |
| | | | 2.5 | 15.30 | 19.48 | 1215.06 | 119.82 | 7.90 | 630.84 | 84.11 | 5.69 | |
| | | | 3.0 | 18.26 | 23.30 | 1451.70 | 142.63 | 7.89 | 760.50 | 101.40 | 5.71 | |
| MM | 250 | 100 | 2.0 | 12.36 | 16.14 | 1180.53 | 96.03 | 8.98 | 245.11 | 49.10 | 3.95 | |
| | | | 2.5 | 15.38 | 20.11 | 1493.40 | 117.38 | 8.92 | 303.56 | 60.71 | 3.94 | |
| | | | 3.0 | 18.40 | 24.05 | 1792.71 | 137.64 | 8.87 | 360.30 | 72.06 | 3.92 | |
| | | | 3.5 | 21.40 | 27.96 | 2077.43 | 153.25 | 8.87 | 405.45 | 81.09 | 3.86 | |
| MM | 250 | 150 | 2.0 | 14.24 | 18.29 | 1527.63 | 123.23 | 9.45 | 621.08 | 82.81 | 5.85 | |
| | | | 2.5 | 17.74 | 22.81 | 1885.67 | 152.27 | 9.42 | 789.82 | 102.64 | 5.84 | |
| | | | 3.0 | 21.24 | 27.05 | 2218.50 | 179.33 | 9.37 | 918.59 | 122.21 | 5.82 | |
| | | | 3.5 | 24.70 | 31.46 | 2536.97 | 205.29 | 9.33 | 1060.91 | 141.45 | 5.81 | |
| MM | 250 | 200 | 2.0 | 15.80 | 19.93 | 1871.25 | 150.85 | 9.80 | 1179.08 | 117.91 | 7.65 | |
| | | | 2.5 | 19.70 | 25.11 | 2312.75 | 186.75 | 9.77 | 1463.93 | 148.39 | 7.64 | |
| | | | 3.0 | 23.58 | 30.05 | 2734.06 | 220.82 | 9.73 | 1694.92 | 169.49 | 7.61 | |
| | | | 3.5 | 27.44 | 34.96 | 3128.05 | 253.12 | 9.69 | 1925.26 | 192.53 | 7.42 | |
| MM | 300 | 100 | 2.0 | 13.90 | 17.80 | 2069.70 | 137.16 | 10.78 | 283.28 | 52.85 | 3.85 | |
| | | | 2.5 | 17.30 | 22.00 | 2518.00 | 168.00 | 10.70 | 295.00 | 59.10 | 3.86 | |
| | | | 3.0 | 20.50 | 26.20 | 2968.00 | 198.00 | 10.60 | 345.00 | 69.70 | 3.85 | |
| | | | 3.5 | 24.00 | 30.57 | 3462.00 | 230.80 | 10.64 | 424.50 | 84.90 | 3.73 | |
| MM | 300 | 150 | 2.0 | 15.90 | 19.80 | 2495.00 | 166.00 | 11.20 | 643.00 | 85.40 | 5.88 | |
| | | | 2.5 | 19.20 | 24.50 | 3071.00 | 205.00 | 11.20 | 790.00 | 105.00 | 5.88 | |
| | | | 3.0 | 22.80 | 29.20 | 3630.00 | 242.00 | 11.20 | 936.00 | 125.00 | 5.86 | |
| | | | 3.5 | 26.20 | 33.44 | 3979.20 | 270.66 | 11.00 | 1048.89 | 139.80 | 5.80 | |
| MM | 300 | 200 | 2.0 | 17.10 | 21.70 | 2725.35 | 187.58 | 11.99 | 1271.83 | 127.18 | 7.64 | |
| | | | 2.5 | 21.20 | 27.00 | 3389.00 | 231.30 | 11.96 | 1574.59 | 157.46 | 7.64 | |
| | | | 3.0 | 26.20 | 33.40 | 4444.00 | 298.00 | 11.80 | 1860.00 | 186.00 | 7.46 | |
| | | | 3.5 | 30.07 | 38.34 | 4906.63 | 333.96 | 11.50 | 2095.25 | 209.60 | 7.39 | |
| MM | 350 | 100 | 2.0 | 15.90 | 19.80 | 3005.00 | 172.00 | 12.30 | 289.00 | 57.70 | 3.62 | |
| | | | 2.5 | 19.20 | 24.50 | 3695.00 | 211.00 | 12.30 | 355.00 | 71.00 | 3.81 | |
| | | | 3.0 | 22.80 | 29.20 | 4382.00 | 249.00 | 12.20 | 419.00 | 83.80 | 3.78 | |
| | | | 3.5 | 26.20 | 33.44 | 4797.50 | 275.00 | 12.10 | 465.70 | 93.14 | 3.73 | |
| MM | 350 | 150 | 2.0 | 17.10 | 21.80 | 3610.00 | 206.00 | 12.90 | 750.00 | 100.00 | 5.87 | |
| | | | 2.5 | 21.20 | 27.00 | 4450.00 | 254.80 | 12.80 | 926.00 | 123.00 | 5.86 | |
| | | | 3.0 | 25.30 | 32.20 | 5265.00 | 301.90 | 12.80 | 1098.00 | 146.00 | 5.84 | |
| | | | 3.5 | 28.96 | 38.67 | 6360.78 | 337.90 | 12.70 | 1264.33 | 183.10 | 5.73 | |
| MM | 350 | 200 | 2.0 | 18.50 | 23.80 | 4216.00 | 241.00 | 13.30 | 1461.00 | 146.00 | 7.84 | |
| | | | 2.5 | 23.20 | 29.50 | 5205.00 | 297.00 | 13.30 | 1809.00 | 181.00 | 7.83 | |
| | | | 3.0 | 28.00 | 36.40 | 6420.00 | 367.80 | 13.30 | 2151.00 | 215.00 | 7.69 | |
| | | | 3.5 | 32.81 | 41.84 | 7109.18 | 413.32 | 13.10 | 2433.00 | 243.30 | 7.63 | |
| MM | 400 | 150 | 2.0 | 17.10 | 21.80 | 3610.00 | 206.00 | 12.90 | 750.00 | 100.00 | 5.87 | |
| | | | 2.5 | 21.20 | 27.00 | 4450.00 | 254.80 | 12.80 | 926.00 | 123.00 | 5.86 | |
| | | | 3.0 | 25.30 | 32.20 | 5265.00 | 301.90 | 12.80 | 1098.00 | 146.00 | 5.84 | |
| | | | 3.5 | 28.96 | 38.67 | 6360.78 | 337.90 | 12.70 | 1264.33 | 183.10 | 5.73 | |
| MM | 400 | 200 | 2.0 | 18.50 | 23.80 | 4216.00 | 241.00 | 13.30 | 1461.00 | 146.00 | 7.84 | |
| | | | 2.5 | 23.20 | 29.50 | 5205.00 | 297.00 | 13.30 | 1809.00 | 181.00 | 7.83 | |
| | | | 3.0 | 28.00 | 36.40 | 6420.00 | 367.80 | 13.30 | 2151.00 | 215.00 | 7.69 | |
| | | | 3.5 | 32.81 | 41.84 | 7109.18 | 413.32 | 13.10 | 2433.00 | 243.30 | 7.63 | |
| MM | 400 | 250 | 2.0 | 20.00 | 26.00 | 5000.00 | 280.00 | 14.00 | 1910.00 | 191.00 | 8.83 | |
| | | | 2.5 | 25.00 | 32.50 | 6250.00 | 350.00 | 14.00 | 2375.00 | 237.50 | 8.83 | |
| | | | 3.0 | 30.00 | 39.00 | 7500.00 | 420.00 | 14.00 | 2840.00 | 284.00 | 8.83 | |
| | | | 3.5 | 35.00 | 45.50 | 8750.00 | 490.00 | 14.00 | 3305.00 | 330.50 | 8.83 | |
| MM | 450 | 150 | 2.0 | 17.10 | 21.80 | 3610.00 | 206.00 | 12.90 | 750.00 | 100.00 | 5.87 | |
| | | | 2.5 | 21.20 | 27.00 | 4450.00 | 254.80 | 12.80 | 926.00 | 123.00 | 5.86 | |
| | | | 3.0 | 25.30 | 32.20 | 5265.00 | 301.90 | 12.80 | 1098.00 | 146.00 | 5.84 | |
| | | | 3.5 | 28.96 | 38.67 | 6360.78 | 337.90 | 12.70 | 1264.33 | 183.10 | 5.73 | |
| MM | 450 | 200 | 2.0 | 18.50 | 23.80 | 4216.00 | 241.00 | 13.30 | 1461.00 | 146.00 | 7.84 | |
| | | | 2.5 | 23.20 | 29.50 | 5205.00 | 297.00 | 13.30 | 1809.00 | 181.00 | 7.83 | |
| | | | 3.0 | 28.00 | 36.40 | 6420.00 | 367.80 | 13.30 | 2151.00 | 215.00 | 7.69 | |
| | | | 3.5 | 32.81 | 41.84 | 7109.18 | 413.32 | 13.10 | 2433.00 | 243.30 | 7.63 | |
| MM | 450 | 250 | 2.0 | 20.00 | 26.00 | 5000.00 | 280.00 | 14.00 | 1910.00 | 191.00 | 8.83 | |
| | | | 2.5 | 25.00 | 32.50 | 6250.00 | 350.00 | 14.00 | 2375.00 | 237.50 | 8.83 | |
| | | | 3.0 | 30.00 | 39.00 | 7500.00 | 420.00 | 14.00 | 2840.00 | 284.00 | 8.83 | |
| | | | 3.5 | 35.00 | 45.50 | 8750.00 | 490.00 | 14.00 | 3305.00 | 330.50 | 8.83 | |

PERFIL ESTRUCTURAL C REFORZADO

| TIPO | A (mm) | B (mm) | C (mm) | t (mm) | r (mm) | Peso (kg/m) | Área (cm ²) | EJE X-X | | | | EJE Y-Y | | | | GEOMETRÍAS |
|------|-----------|-----------|-----------|-----------|-----------|----------------|----------------------------|--------------------------------------|--------------------------------------|------------------------|--------------------------------------|--------------------------------------|------------------------|--------------------------------------|--------------------------------------|------------|
| | | | | | | | | I _x (cm ⁴) | S _x (cm ³) | r _x (cm) | I _y (cm ⁴) | S _y (cm ³) | r _y (cm) | I _x (cm ⁴) | S _x (cm ³) | |
| C | 120 | 60 | 15 | 1.10 | 1.65 | 2.23 | 2.84 | 66.02 | 11.00 | 4.82 | 13.89 | 3.31 | 2.21 | 1.80 | | |
| | | | | 1.20 | 1.80 | 2.43 | 3.09 | 71.81 | 11.97 | 4.82 | 15.06 | 3.60 | 2.21 | 1.81 | | |
| | | | | 1.50 | 2.25 | 3.02 | 3.85 | 86.99 | 14.83 | 4.81 | 16.58 | 4.42 | 2.20 | 1.80 | | |
| | | | | 2.00 | 3.00 | 4.01 | 5.11 | 118.99 | 19.49 | 4.79 | 24.16 | 6.77 | 2.18 | 1.81 | | |
| C | 150 | 80 | 12.7 | 1.10 | 1.65 | 2.30 | 2.93 | 96.25 | 13.50 | 5.79 | 8.98 | 2.43 | 1.75 | 1.31 | | |
| | | | | 1.20 | 1.80 | 2.50 | 3.19 | 108.96 | 14.25 | 5.79 | 9.74 | 2.64 | 1.75 | 1.32 | | |
| | | | | 1.50 | 2.25 | 3.32 | 3.98 | 132.87 | 17.68 | 5.77 | 11.96 | 3.25 | 1.73 | 1.32 | | |
| | | | | 2.00 | 3.00 | 4.01 | 5.11 | 178.00 | 23.00 | 5.75 | 16.00 | 4.38 | 1.73 | 1.32 | | |
| C | 152 | 64 | 19 | 1.10 | 1.65 | 2.67 | 3.40 | 124.13 | 16.33 | 6.04 | 19.31 | 4.38 | 2.38 | 1.99 | | |
| | | | | 1.20 | 1.80 | 2.92 | 3.71 | 135.10 | 17.76 | 6.02 | 20.97 | 4.78 | 2.38 | 1.99 | | |
| | | | | 1.50 | 2.25 | 3.63 | 4.63 | 167.70 | 22.07 | 6.02 | 25.98 | 6.07 | 2.38 | 2.00 | | |
| | | | | 2.00 | 3.00 | 4.91 | 5.11 | 218.99 | 29.49 | 5.99 | 36.29 | 8.35 | 2.31 | 1.80 | | |
| C | 160 | 60 | 19 | 1.10 | 1.65 | 2.30 | 2.93 | 96.25 | 13.50 | 5.79 | 8.98 | 2.43 | 1.75 | 1.31 | | |
| | | | | 1.20 | 1.80 | 2.50 | 3.19 | 108.96 | 14.25 | 5.79 | 9.74 | 2.64 | 1.75 | 1.32 | | |
| | | | | 1.50 | 2.25 | 3.32 | 3.98 | 132.87 | 17.68 | 5.77 | 11.96 | 3.25 | 1.73 | 1.32 | | |
| | | | | 2.00 | 3.00 | 4.01 | 5.11 | 178.00 | 23.00 | 5.75 | 16.00 | 4.38 | 1.73 | 1.32 | | |
| C | 200 | 50 | 12.7 | 1.10 | 1.65 | 2.74 | 3.49 | 192.44 | 19.24 | 7.43 | 9.71 | 2.60 | 1.67 | 1.11 | | |
| | | | | 1.20 | 1.80 | 2.96 | 3.81 | 209.48 | 20.95 | 7.41 | 10.63 | 2.71 | 1.66 | 1.12 | | |
| | | | | 1.50 | 2.25 | 3.49 | 4.69 | 244.01 | 24.05 | 7.37 | 12.99 | 3.33 | 1.65 | 1.12 | | |
| | | | | 2.00 | 3.00 | 4.17 | 5.11 | 309.94 | 32.04 | 7.28 | 20.78 | 4.42 | 1.29 | 1.20 | | |
| C | 203 | 64 | 19 | 1.10 | 1.65 | 3.39 | 4.32 | 261.25 | 26.74 | 7.78 | 22.97 | 4.81 | 2.29 | 1.71 | | |
| | | | | 1.20 | 1.80 | 3.76 | 4.69 | 284.68 | 31.89 | 7.76 | 27.83 | 5.99 | 2.27 | 1.70 | | |
| | | | | 1.50 | 2.25 | 4.63 | 5.99 | 348.68 | 39.89 | 7.73 | 33.99 | 7.33 | 2.27 | 1.70 | | |
| | | | | 2.00 | 3.00 | 5.11 | 5.11 | 444.00 | 50.00 | 7.70 | 44.00 | 8.00 | 2.27 | 1.70 | | |
| C | 220 | 80 | 19 | 1.10 | 1.65 | 3.17 | 3.96 | 239.94 | 23.94 | 7.76 | 20.78 | 4.42 | 2.29 | 1.70 | | |
| | | | | 1.20 | 1.80 | 3.47 | 4.32 | 261.25 | 26.74 | 7. | | | | | | |

SECCIÓN C CAJÓN REFORZADO

| TIPO | A' (mm) | B' (mm) | C' (mm) | t (mm) | r (mm) | Peso (kg/ml) | Área (cm ²) | EJE X-X | | | EJE Y-Y | | | GEOMETRÍAS |
|------|---------|---------|---------|--------|--------|--------------|-------------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|-----------------------------------|---------------------|------------|
| | | | | | | | | I _x (cm ⁴) | S _x (cm ³) | r _x (cm) | I _y (cm ⁴) | S _y (cm ³) | r _y (cm) | |
| CC | 120 | 120 | 12,7 | 1,10 | 1,65 | 4,46 | 5,68 | 132,03 | 22,01 | 4,82 | 127,91 | 5,33 | 4,75 | |
| | | | | 1,20 | 1,80 | 4,86 | 6,19 | 143,62 | 23,94 | 4,82 | 138,75 | 5,78 | 4,74 | |
| | | | | 1,50 | 2,25 | 6,05 | 7,71 | 177,99 | 29,66 | 4,81 | 173,06 | 7,21 | 4,74 | |
| | | | | 2,00 | 3,00 | 8,02 | 10,21 | 233,92 | 38,99 | 4,79 | 227,69 | 9,49 | 4,72 | |
| | | | | 2,50 | 3,75 | 9,97 | 12,69 | 288,20 | 48,03 | 4,76 | 282,93 | 11,79 | 4,72 | |
| CC | 150 | 100 | 12,7 | 1,10 | 1,65 | 4,60 | 5,86 | 196,50 | 26,20 | 5,79 | 97,75 | 4,89 | 4,08 | |
| | | | | 1,20 | 1,80 | 5,01 | 6,38 | 213,80 | 28,51 | 5,79 | 106,07 | 5,30 | 4,08 | |
| | | | | 1,50 | 2,25 | 6,25 | 7,96 | 265,13 | 35,35 | 5,77 | 131,73 | 6,59 | 4,07 | |
| CC | 152 | 127 | 19 | 1,10 | 1,65 | 5,34 | 6,80 | 248,25 | 32,46 | 6,04 | 170,87 | 6,73 | 5,01 | |
| | | | | 1,20 | 1,80 | 5,83 | 7,43 | 270,19 | 35,55 | 6,03 | 186,21 | 7,33 | 5,01 | |
| | | | | 1,50 | 2,25 | 7,27 | 9,26 | 335,40 | 44,13 | 6,02 | 231,43 | 9,11 | 5,00 | |
| CC | 160 | 120 | 19 | 1,20 | 1,80 | 5,79 | 7,28 | 288,02 | 36,00 | 6,25 | 166,76 | 6,95 | 4,75 | |
| | | | | 1,50 | 2,25 | 7,22 | 9,20 | 357,55 | 44,69 | 6,23 | 207,30 | 8,64 | 4,75 | |
| | | | | 2,00 | 3,00 | 9,12 | 11,62 | 471,28 | 58,91 | 6,27 | 262,74 | 10,95 | 4,76 | |
| | | | | 2,50 | 3,75 | 11,93 | 15,20 | 582,33 | 72,79 | 6,19 | 328,58 | 14,11 | 4,72 | |
| CC | 200 | 100 | 12,7 | 1,10 | 1,65 | 5,48 | 6,98 | 384,89 | 39,49 | 7,43 | 125,04 | 6,25 | 4,23 | |
| | | | | 1,20 | 1,80 | 5,98 | 7,62 | 418,96 | 41,90 | 7,41 | 135,78 | 6,79 | 4,22 | |
| | | | | 1,50 | 2,25 | 7,46 | 9,50 | 520,26 | 52,03 | 7,40 | 168,88 | 8,44 | 4,22 | |
| CC | 203 | 127 | 19 | 1,10 | 1,65 | 6,22 | 7,92 | 479,88 | 47,28 | 7,78 | 216,73 | 8,53 | 5,23 | |
| | | | | 1,20 | 1,80 | 6,78 | 8,64 | 522,50 | 51,48 | 7,78 | 235,50 | 9,27 | 5,22 | |
| | | | | 1,50 | 2,25 | 8,46 | 10,78 | 649,35 | 63,98 | 7,76 | 293,64 | 11,56 | 5,22 | |
| CC | 220 | 100 | 19 | 1,20 | 1,80 | 7,72 | 9,84 | 727,17 | 66,11 | 8,60 | 411,91 | 12,87 | 6,47 | |
| | | | | 1,50 | 2,25 | 9,64 | 12,28 | 904,31 | 82,21 | 8,58 | 514,55 | 16,08 | 6,47 | |
| | | | | 2,00 | 3,00 | 12,81 | 16,32 | 1195,45 | 108,66 | 8,56 | 678,08 | 21,10 | 6,45 | |
| | | | | 2,50 | 3,75 | 15,97 | 20,34 | 1481,54 | 134,09 | 8,53 | 840,29 | 26,26 | 6,43 | |
| CC | 254 | 127 | 19 | 1,20 | 1,80 | 7,75 | 9,87 | 891,76 | 70,22 | 9,51 | 265,08 | 11,22 | 5,37 | |
| | | | | 1,50 | 2,25 | 9,66 | 12,30 | 1109,14 | 87,33 | 9,50 | 354,66 | 13,96 | 5,37 | |
| | | | | 2,00 | 3,00 | 12,84 | 16,36 | 1466,07 | 115,48 | 9,47 | 468,41 | 18,44 | 5,35 | |
| CC | 305 | 127 | 19 | 1,50 | 2,25 | 10,86 | 13,84 | 1728,21 | 113,33 | 11,17 | 416,34 | 16,30 | 5,48 | |
| | | | | 2,00 | 3,00 | 14,44 | 18,40 | 2267,31 | 149,00 | 11,15 | 550,98 | 21,69 | 5,47 | |
| | | | | 1,50 | 2,25 | 11,45 | 14,58 | 1500,92 | 124,65 | 11,42 | 673,34 | 21,04 | 6,80 | |
| CC | 305 | 160 | 19 | 2,00 | 3,00 | 15,23 | 19,40 | 2516,84 | 165,04 | 11,39 | 890,60 | 27,80 | 6,78 | |
| | | | | 2,50 | 3,75 | 18,98 | 24,16 | 3124,00 | 204,85 | 11,37 | 1069,33 | 33,42 | 6,65 | |
| | | | | 1,50 | 2,25 | 14,05 | 17,89 | 3267,27 | 214,25 | 13,51 | 1244,52 | 31,11 | 8,34 | |
| CC | 355 | 200 | 25 | 2,00 | 3,00 | 18,69 | 23,81 | 4330,88 | 283,99 | 13,40 | 1648,58 | 41,21 | 8,32 | |
| | | | | 2,50 | 3,75 | 23,31 | 29,69 | 5381,90 | 352,91 | 13,46 | 2047,35 | 51,18 | 8,30 | |