

## FICHA TÉCNICA

### PERFILES C GRADO 50 y 36

NEGROS Y GALVANIZADOS NTC - 5685

PÓRTICOS - CERCHAS - CORREAS - COLUMNAS - VIGAS - VIGUETAS



#### CONSORCIO METÁLURGICO NACIONAL S.A.S.

Tubos COLMENA S.A.S. es una empresa responsable y consciente de las dificultades de nuestro país en la industria del acero, por lo cual ha centrado esfuerzos en promover e impulsar el desarrollo y manipulación de la estructura metálica, con una política centrada en la optimización de los productos y soluciones actuales, fomentando mayor competitividad y eficiencia en obra.

#### MATERIALES DE FABRICACIÓN

Los Perfiles C Grado 50 y Grado 36 COLMENA, son una 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 de la línea estructural COLMENA.

Éstos perfiles son fabricados con acero de calidad estructural, los perfiles de sección abierta cumplen con la norma NTC 5685, ASTM A-1011 Grado 50. Para espesores de 2,0 - 2,5 - 3,0 - 4,0 mm.

Esfuerzo de Fluencia mínimo

- $F_y = 3.500 \text{ kg/cm}^2$  (50.000 psi/350 Mpa)
- $T_s = 4.368 \text{ kg/cm}^2$  (62.400 psi/437 Mpa)
- Elongación 2" del 21%.

Los perfiles de sección abierta cumplen con la norma NTC 5685, ASTM A-1011 Grado 36. Para espesores de 1,2 - 1,5 - 1,9 - 2,3 mm =

Esfuerzo de Fluencia mínimo

- $F_y = 2.530 \text{ kg/cm}^2$  (36.000psi/253 Mpa)
- $T_s = 3.866 \text{ kg/cm}^2$  (55.000 psi/387 Mpa)
- Elongación 2" del 21%.



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PÓRTICOS - CERCHAS - CORREAS - COLUMNAS - VIGAS - VIGUETAS

NTC 5685:2018

BUREAU VERITAS

Certification



Perfiles estructurales de acero conformados en frío

CONSORCIO METALÚRGICO NACIONAL SAS



ACERO EN EVOLUCIÓN

## PERFIL C NEGROS - GRADO 50



| PERFIL  |           |          |              | PROPIEDADES SECCIÓN BRUTA |                   |            |                      |                      |                     |                      |                      |                      |                     | PROPIEDADES TORCIONALES |                      |                     |                      |      |                     | UNIDAD DE EMPAQUE |
|---------|-----------|----------|--------------|---------------------------|-------------------|------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------|-------------------------|----------------------|---------------------|----------------------|------|---------------------|-------------------|
| CÓDIGO  | ALMA (mm) | ALA (mm) | PESTAÑA (mm) | ESPESOR (mm)              | PESO NEGRO (Kg/m) | ÁREA (cm²) | I <sub>x</sub> (cm⁴) | S <sub>x</sub> (cm³) | R <sub>x</sub> (cm) | Y <sub>cg</sub> (mm) | I <sub>y</sub> (cm⁴) | S <sub>y</sub> (cm³) | R <sub>y</sub> (cm) | X <sub>cg</sub> (cm)    | I <sub>x</sub> (cm⁴) | R <sub>x</sub> (cm) | C <sub>w</sub> (cm⁶) | β    | J <sub>y</sub> (cm) |                   |
| C76X38  | 76        | 38       | 10           | 2,00                      | 2,45              | 3,11       | 27,83                | 7,32                 | 2,99                | 38,00                | 5,60                 | 0,15                 | 1,34                | 1,15                    | 22,27                | 4,38                | 71,79                | 0,56 | 41,44               | 100               |
|         |           |          |              | 2,50                      | 2,98              | 3,78       | 33,02                | 8,69                 | 2,96                | 38,00                | 6,46                 | 0,18                 | 1,31                | 1,12                    | 26,42                | 4,30                | 84,09                | 0,57 | 78,78               |                   |
| C100X50 | 100       | 50       | 15           | 2,00                      | 3,36              | 4,27       | 67,49                | 13,50                | 3,98                | 50,00                | 14,50                | 0,30                 | 1,84                | 1,61                    | 53,99                | 5,95                | 332,36               | 0,54 | 56,91               | 40                |
|         |           |          |              | 2,50                      | 4,12              | 5,23       | 81,26                | 16,25                | 3,94                | 50,00                | 17,15                | 0,35                 | 1,81                | 1,58                    | 65,01                | 5,88                | 394,91               | 0,54 | 108,98              |                   |
| C120X60 | 120       | 60       | 15           | 3,00                      | 4,85              | 6,15       | 93,82                | 18,76                | 3,90                | 50,00                | 19,43                | 0,40                 | 1,78                | 1,55                    | 75,05                | 5,80                | 450,81               | 0,55 | 184,59              | 40                |
|         |           |          |              | 2,00                      | 3,99              | 5,07       | 117,24               | 19,54                | 4,81                | 60,00                | 24,16                | 0,42                 | 2,18                | 1,87                    | 93,79                | 7,05                | 749,93               | 0,56 | 67,57               |                   |
| C120X60 | 120       | 60       | 15           | 2,50                      | 4,91              | 6,23       | 142,05               | 23,67                | 4,77                | 60,00                | 28,79                | 0,50                 | 2,15                | 1,84                    | 113,64               | 6,97                | 898,67               | 0,56 | 129,82              | 40                |
|         |           |          |              | 3,00                      | 5,79              | 7,35       | 165,10               | 27,52                | 4,74                | 60,00                | 32,89                | 0,57                 | 2,12                | 1,80                    | 132,08               | 6,89                | 1034,37              | 0,57 | 220,59              |                   |
| C150X50 | 150       | 50       | 15           | 2,00                      | 4,15              | 5,27       | 174,80               | 23,31                | 5,76                | 75,00                | 16,61                | 0,34                 | 1,78                | 1,31                    | 139,84               | 6,95                | 789,82               | 0,75 | 70,24               | 40                |
|         |           |          |              | 2,50                      | 5,10              | 6,48       | 211,90               | 28,25                | 5,72                | 75,00                | 19,67                | 0,40                 | 1,74                | 1,28                    | 169,52               | 6,88                | 945,93               | 0,76 | 135,03              |                   |
| C160X60 | 160       | 60       | 15           | 3,00                      | 6,03              | 7,65       | 246,39               | 32,85                | 5,67                | 75,00                | 22,32                | 0,46                 | 1,71                | 1,24                    | 197,11               | 6,80                | 1087,67              | 0,76 | 229,59              | 40                |
|         |           |          |              | 2,00                      | 4,62              | 5,87       | 228,73               | 28,59                | 6,24                | 80,00                | 26,57                | 0,46                 | 2,13                | 1,62                    | 182,99               | 7,82                | 1400,74              | 0,71 | 78,24               |                   |
| C160X60 | 160       | 60       | 15           | 2,50                      | 5,69              | 7,23       | 278,26               | 34,78                | 6,20                | 80,00                | 31,70                | 0,54                 | 2,09                | 1,58                    | 222,61               | 7,75                | 1686,58              | 0,71 | 150,65              | 40                |
|         |           |          |              | 3,00                      | 6,74              | 8,55       | 324,76               | 40,60                | 6,16                | 80,00                | 36,25                | 0,62                 | 2,06                | 1,55                    | 259,81               | 7,67                | 1949,78              | 0,72 | 256,59              |                   |
| C203X64 | 203       | 64       | 19           | 2,00                      | 5,54              | 7,05       | 428,74               | 42,24                | 7,80                | 101,50               | 36,91                | 0,59                 | 2,29                | 1,65                    | 342,99               | 9,24                | 3162,19              | 0,77 | 93,97               | 30                |
|         |           |          |              | 2,50                      | 6,85              | 8,71       | 523,83               | 51,61                | 7,76                | 101,50               | 44,29                | 0,71                 | 2,26                | 1,62                    | 419,07               | 9,16                | 3824,86              | 0,78 | 181,38              |                   |
| C220X80 | 220       | 80       | 19           | 3,00                      | 8,13              | 10,32      | 614,15               | 60,51                | 7,71                | 101,50               | 50,97                | 0,82                 | 2,22                | 1,59                    | 491,32               | 9,09                | 4441,61              | 0,78 | 309,69              | 24                |
|         |           |          |              | 2,00                      | 6,31              | 8,03       | 594,93               | 54,08                | 8,61                | 110,00               | 65,26                | 0,84                 | 2,85                | 2,13                    | 475,94               | 10,63               | 6376,18              | 0,73 | 107,04              |                   |
| C220X80 | 220       | 80       | 19           | 2,50                      | 7,81              | 9,93       | 729,15               | 66,29                | 8,57                | 110,00               | 78,82                | 1,01                 | 2,82                | 2,10                    | 583,32               | 10,56               | 7750,76              | 0,73 | 206,90              | 30                |
|         |           |          |              | 3,00                      | 9,28              | 11,79      | 857,64               | 77,97                | 8,53                | 110,00               | 91,32                | 1,17                 | 2,78                | 2,07                    | 686,11               | 10,48               | 9045,59              | 0,73 | 353,79              |                   |
| C250X75 | 250       | 75       | 25           | 2,00                      | 6,81              | 8,67       | 797,46               | 63,80                | 9,59                | 125,00               | 64,85                | 0,89                 | 2,74                | 1,97                    | 637,97               | 11,27               | 8534,22              | 0,78 | 115,57              | 30                |
|         |           |          |              | 2,50                      | 8,44              | 10,73      | 978,54               | 78,28                | 9,55                | 125,00               | 78,45                | 1,07                 | 2,70                | 1,94                    | 782,84               | 11,20               | 10378,16             | 0,79 | 223,57              |                   |
| C254X64 | 254       | 64       | 19           | 3,00                      | 10,03             | 12,75      | 1152,39              | 92,19                | 9,51                | 125,00               | 91,04                | 1,25                 | 2,67                | 1,91                    | 921,91               | 11,12               | 12116,38             | 0,79 | 382,59              | 30                |
|         |           |          |              | 2,00                      | 6,34              | 8,07       | 731,72               | 57,62                | 9,52                | 127,00               | 39,33                | 0,63                 | 2,21                | 1,44                    | 585,38               | 10,55               | 5195,86              | 0,86 | 107,57              |                   |
| C305X64 | 305       | 64       | 19           | 2,50                      | 7,85              | 9,98       | 896,16               | 70,56                | 9,48                | 127,00               | 47,21                | 0,75                 | 2,17                | 1,41                    | 716,93               | 10,48               | 6298,55              | 0,86 | 207,94              | 20                |
|         |           |          |              | 3,00                      | 9,33              | 11,85      | 1053,28              | 82,94                | 9,43                | 127,00               | 54,33                | 0,87                 | 2,14                | 1,38                    | 842,62               | 10,41               | 7329,42              | 0,86 | 355,59              |                   |
| C305X64 | 305       | 64       | 19           | 2,00                      | 7,14              | 9,09       | 1139,68              | 74,73                | 11,20               | 152,50               | 41,21                | 0,66                 | 2,13                | 1,28                    | 911,74               | 11,97               | 7835,54              | 0,91 | 121,17              | 16                |
|         |           |          |              | 2,50                      | 8,85              | 11,26      | 1398,36              | 91,70                | 11,15               | 152,50               | 49,46                | 0,79                 | 2,10                | 1,25                    | 1118,68              | 11,89               | 9511,06              | 0,91 | 234,51              |                   |
| 305X80  | 305       | 80       | 19           | 3,00                      | 10,53             | 13,38      | 1646,62              | 107,98               | 11,09               | 152,50               | 56,92                | 0,91                 | 2,06                | 1,22                    | 1317,30              | 11,82               | 11081,72             | 0,91 | 401,49              | 16                |
|         |           |          |              | 4,00                      | 13,79             | 17,51      | 2112,11              | 138,50               | 10,98               | 152,50               | 69,55                | 1,11                 | 1,99                | 1,17                    | 1689,69              | 11,67               | 13923,64             | 0,91 | 933,97              |                   |
| 355X110 | 355       | 110      | 25           | 2,00                      | 7,65              | 9,73       | 1286,57              | 84,37                | 11,50               | 152,50               | 71,63                | 0,92                 | 2,71                | 1,76                    | 1029,26              | 12,77               | 13255,20             | 0,86 | 129,71              | 16                |
|         |           |          |              | 2,50                      | 9,48              | 12,06      | 1581,37              | 103,70               | 11,45               | 152,50               | 86,54                | 1,11                 | 2,68                | 1,73                    | 1265,09              | 12,69               | 16156,57             | 0,86 | 251,17              |                   |
| C400X85 | 400       | 85       | 25           | 3,00                      | 11,28             | 14,34      | 1865,51              | 122,33               | 11,40               | 152,50               | 100,28               | 1,28                 | 2,64                | 1,70                    | 1492,41              | 12,62               | 18904,39             | 0,86 | 430,29              | 25                |
|         |           |          |              | 4,00                      | 14,79             | 18,79      | 2402,03              | 157,51               | 11,31               | 152,50               | 124,36               | 1,59                 | 2,57                | 1,64                    | 1921,62              | 12,47               | 23959,53             | 0,86 | 1002,24             |                   |
| C400X85 | 400       | 85       | 25           | 2,00                      | 9,56              | 12,17      | 2285,59              | 128,77               | 13,71               | 177,50               | 181,50               | 1,69                 | 3,86                | 2,69                    | 1828,47              | 15,94               | 45091,19             | 0,80 | 162,24              | 16                |
|         |           |          |              | 2,50                      | 11,87             | 15,11      | 2819,81              | 158,86               | 13,66               | 177,50               | 221,41               | 2,06                 | 3,83                | 2,66                    | 2255,84              | 15,87               | 55287,30             | 0,80 | 314,71              |                   |
| C400X85 | 400       | 85       | 25           | 3,00                      | 14,15             | 18,00      | 3339,25              | 188,13               | 13,62               | 177,50               | 259,17               | 2,41                 | 3,79                | 2,63                    | 2671,40              | 15,80               | 65078,34             | 0,80 | 540,09              | 25                |
|         |           |          |              | 4,00                      | 18,62             | 23,67      | 4334,06              | 244,17               | 13,53               | 177,50               | 328,36               | 3,06                 | 3,72                | 2,57                    | 3467,25              | 15,65               | 83491,02             | 0,80 | 1262,51             |                   |
| C450X85 | 450       | 85       | 25           | 2,00                      | 9,48              | 12,07      | 2633,77              | 131,69               | 14,77               | 200,00               | 99,67                | 1,20                 | 2,87                | 1,74                    | 2107,01              | 15,84               | 32241,51             | 0,90 | 160,91              | 25                |
|         |           |          |              | 2,50                      | 11,78             | 14,98      | 3246,88              | 162,34               | 14,72               | 200,00               | 120,94               | 1,45                 | 2,84                | 1,72                    | 2597,50              | 15,76               | 39420,97             | 0,90 | 312,11              |                   |
| C450X85 | 450       | 85       | 25           | 3,00                      | 14,04             | 17,85      | 3841,98              | 192,10               | 14,67               | 200,00               | 140,78               | 1,69                 | 2,81                | 1,69                    | 3073,59              | 15,69               | 46268,53             | 0,91 | 535,59              | 25                |
|         |           |          |              | 4,00                      | 18,46             | 23,47      | 4978,38              | 248,92               | 14,56               | 200,00               | 176,30               | 2,11                 | 2,74                | 1,63                    | 3982,70              | 15,55               | 59005,54             | 0,91 | 1251,84             |                   |
| C450X85 | 450       | 85       | 25           | 2,00                      | 10,27             | 13,07      | 3510,54              | 156,02               | 16,39               | 225,00               | 102,48               | 1,23                 | 2,80                | 1,61                    | 2808,43              | 17,26               | 42038,31             | 0,93 | 174,24              | 25                |
|         |           |          |              | 2,50                      | 12,76             | 16,23      | 4331,34              | 192,50               | 16,34               | 225,00               | 124,33               | 1,49                 | 2,77                | 1,58                    | 3465,08              | 17,19               | 51427,18             | 0,93 | 338,15              |                   |
| C450X85 | 450       | 85       | 25           | 3,00                      | 15,21             | 19,35      | 5129,54              | 227,98               | 16,28               | 225,00               | 144,73               | 1,73                 | 2,73                | 1,56                    | 4103,63              | 17,12               | 60391,90             | 0,93 | 580,59              | 25                |
|         |           |          |              | 4,00                      | 20,03             | 25,47      | 6658,40              | 295,93               | 16,17               | 225,00               | 181,22               | 2,17                 | 2,67                | 1,51                    | 5326,72              | 16,97               | 77093,75             | 0,93 | 1358,51             |                   |

Los perfiles de sección abierta cumplen con la norma NTC 5685, ASTM A-1011 Grado 50. Para espesores de 2,0 - 2,5 - 3,0 - 4,0 mm. Esfuerzo de Fluencia mínimo Fy=3.500 kg/cm² (50.000 psi) (350 Mpa) Ts= 4.368 kg/cm² (62.400 psi) (437 Mpa). Elongación 2"del 21%.

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ACERO EN EVOLUCIÓN

## PERFIL C - GRADO 50 DOBLE



|           | MIEMBRO |        |            |            |                   |            | PROPIEDADES EJE X-X |         |        |        | PROPIEDADES EJE Y-Y TIPO CAJÓN |         |        |         | PROPIEDADES EJE Y-Y TIPO "I" |        |                     |           | PROPIEDADES TORCIONALES |  |  |  |
|-----------|---------|--------|------------|------------|-------------------|------------|---------------------|---------|--------|--------|--------------------------------|---------|--------|---------|------------------------------|--------|---------------------|-----------|-------------------------|--|--|--|
| CÓDIGO    | ALMA mm | ALA mm | PESTAÑA mm | ESPESOR mm | PESO NEGRO (Kg/m) | ÁREA (cm²) | I (cm⁴)             | S (cm³) | R (cm) | Y (mm) | I (cm⁴)                        | S (cm³) | R (cm) | I (cm⁴) | S (cm³)                      | R (cm) | R <sub>0</sub> (cm) | C (cm⁴)   | J (cm⁴)                 |  |  |  |
| CC150x50  | 150     | 100    | 15         | 2,00       | 8,29              | 10,536     | 349,61              | 46,61   | 5,76   | 75,00  | 176,94                         | 35,39   | 4,10   | 51,20   | 10,24                        | 0,83   | 6,95                | 1579,64   | 140,48                  |  |  |  |
|           |         |        |            | 2,50       | 10,21             | 12,963     | 423,79              | 56,51   | 5,72   | 75,00  | 219,14                         | 43,83   | 4,11   | 60,43   | 12,09                        | 0,90   | 6,88                | 1891,86   | 270,05                  |  |  |  |
|           |         |        |            | 3,00       | 12,06             | 15,306     | 492,78              | 65,70   | 5,67   | 75,00  | 260,50                         | 52,10   | 4,13   | 68,34   | 13,67                        | 0,95   | 6,80                | 2175,34   | 459,18                  |  |  |  |
| CC160x60  | 160     | 120    | 15         | 2,00       | 9,23              | 11,736     | 457,47              | 57,18   | 6,24   | 80,00  | 278,80                         | 46,47   | 4,87   | 83,76   | 13,96                        | 1,02   | 7,82                | 2801,47   | 156,48                  |  |  |  |
|           |         |        |            | 2,50       | 11,38             | 14,463     | 556,51              | 69,56   | 6,20   | 80,00  | 345,58                         | 57,60   | 4,89   | 99,64   | 16,61                        | 1,12   | 7,75                | 3373,17   | 301,30                  |  |  |  |
|           |         |        |            | 3,00       | 13,47             | 17,106     | 649,52              | 81,19   | 6,16   | 80,00  | 411,17                         | 68,53   | 4,90   | 113,62  | 18,94                        | 1,19   | 7,67                | 3899,56   | 513,18                  |  |  |  |
| CC203x64  | 203     | 128    | 19         | 2,00       | 11,08             | 14,096     | 857,48              | 84,48   | 7,80   | 101,50 | 392,05                         | 61,26   | 5,27   | 112,12  | 17,52                        | 1,05   | 9,24                | 6324,38   | 187,95                  |  |  |  |
|           |         |        |            | 2,50       | 13,70             | 17,413     | 1047,67             | 103,22  | 7,76   | 101,50 | 486,76                         | 76,06   | 5,29   | 134,18  | 20,97                        | 1,15   | 9,16                | 7649,72   | 362,76                  |  |  |  |
|           |         |        |            | 3,00       | 16,25             | 20,646     | 1228,31             | 121,02  | 7,71   | 101,50 | 580,11                         | 90,64   | 5,30   | 153,98  | 24,06                        | 1,23   | 9,09                | 8883,22   | 619,38                  |  |  |  |
| CC220x80  | 220     | 160    | 19         | 2,00       | 12,62             | 16,056     | 1189,85             | 108,17  | 8,61   | 110,00 | 683,43                         | 85,43   | 6,52   | 203,47  | 25,43                        | 1,36   | 10,63               | 12752,37  | 214,08                  |  |  |  |
|           |         |        |            | 2,50       | 15,62             | 19,863     | 1458,30             | 132,57  | 8,57   | 110,00 | 849,13                         | 106,14  | 6,54   | 245,21  | 30,65                        | 1,49   | 10,56               | 15501,52  | 413,80                  |  |  |  |
|           |         |        |            | 3,00       | 18,56             | 23,586     | 1715,27             | 155,93  | 8,53   | 110,00 | 1012,74                        | 126,59  | 6,55   | 283,46  | 35,43                        | 1,61   | 10,48               | 18091,17  | 707,58                  |  |  |  |
| CC250x75  | 250     | 150    | 25         | 2,00       | 13,63             | 17,336     | 1594,92             | 127,59  | 9,59   | 125,00 | 660,69                         | 88,09   | 6,17   | 196,68  | 26,22                        | 1,25   | 11,27               | 17068,44  | 231,15                  |  |  |  |
|           |         |        |            | 2,50       | 16,88             | 21,463     | 1957,09             | 156,57  | 9,55   | 125,00 | 821,34                         | 109,51  | 6,19   | 237,34  | 31,65                        | 1,38   | 11,20               | 20756,31  | 447,14                  |  |  |  |
|           |         |        |            | 3,00       | 20,06             | 25,506     | 2304,78             | 184,38  | 9,51   | 125,00 | 980,15                         | 130,69  | 6,20   | 274,76  | 36,63                        | 1,48   | 11,12               | 24232,77  | 765,18                  |  |  |  |
| CC254x64  | 254     | 128    | 19         | 2,00       | 12,69             | 16,136     | 1463,44             | 115,23  | 9,52   | 127,00 | 475,61                         | 74,31   | 5,43   | 112,12  | 17,52                        | 0,94   | 10,55               | 10391,72  | 215,15                  |  |  |  |
|           |         |        |            | 2,50       | 15,70             | 19,963     | 1792,32             | 141,13  | 9,48   | 127,00 | 591,21                         | 92,38   | 5,44   | 134,18  | 20,97                        | 1,03   | 10,48               | 12597,11  | 415,89                  |  |  |  |
|           |         |        |            | 3,00       | 18,65             | 23,706     | 2106,56             | 165,87  | 9,43   | 127,00 | 705,45                         | 110,23  | 5,46   | 153,98  | 24,06                        | 1,10   | 10,41               | 14658,84  | 711,18                  |  |  |  |
| CC305x64  | 305     | 128    | 19         | 2,00       | 14,29             | 18,176     | 2279,36             | 149,47  | 11,20  | 152,50 | 559,17                         | 87,37   | 5,55   | 112,12  | 17,52                        | 0,86   | 11,97               | 15671,08  | 242,35                  |  |  |  |
|           |         |        |            | 2,50       | 17,70             | 22,513     | 2796,71             | 183,39  | 11,15  | 152,50 | 695,65                         | 108,70  | 5,56   | 134,18  | 20,97                        | 0,94   | 11,89               | 19022,11  | 469,01                  |  |  |  |
|           |         |        |            | 3,00       | 21,05             | 26,766     | 3293,25             | 215,95  | 11,09  | 152,50 | 830,79                         | 129,81  | 5,57   | 153,98  | 24,06                        | 1,00   | 11,82               | 22163,43  | 802,98                  |  |  |  |
| CC305x80  | 305     | 160    | 19         | 4,00       | 27,57             | 35,024     | 4224,22             | 277,00  | 10,98  | 152,50 | 1096,96                        | 171,40  | 5,60   | 187,08  | 29,23                        | 1,11   | 11,67               | 27847,29  | 1867,95                 |  |  |  |
|           |         |        |            | 2,00       | 15,29             | 19,456     | 2573,15             | 168,73  | 11,50  | 152,50 | 901,03                         | 112,63  | 6,81   | 203,47  | 25,43                        | 1,16   | 12,77               | 26510,40  | 259,41                  |  |  |  |
|           |         |        |            | 2,50       | 18,96             | 24,113     | 3162,74             | 207,39  | 11,45  | 152,50 | 1121,13                        | 140,14  | 6,82   | 245,21  | 30,65                        | 1,27   | 12,69               | 32313,14  | 502,34                  |  |  |  |
| CC355x110 | 355     | 220    | 25         | 3,00       | 22,56             | 28,686     | 3731,03             | 244,66  | 11,40  | 152,50 | 1339,14                        | 167,39  | 6,83   | 283,46  | 35,43                        | 1,36   | 12,62               | 37808,79  | 860,58                  |  |  |  |
|           |         |        |            | 4,00       | 29,58             | 37,584     | 4804,06             | 315,02  | 11,31  | 152,50 | 1768,81                        | 221,10  | 6,86   | 349,85  | 43,73                        | 1,51   | 12,47               | 47919,06  | 2004,48                 |  |  |  |
|           |         |        |            | 2,00       | 19,12             | 24,336     | 4571,18             | 257,53  | 13,71  | 177,50 | 2042,39                        | 185,67  | 9,16   | 539,49  | 49,04                        | 1,74   | 15,94               | 90182,38  | 324,48                  |  |  |  |
| CC400x85  | 400     | 170    | 25         | 2,50       | 23,75             | 30,213     | 5639,61             | 317,72  | 13,66  | 177,50 | 2543,29                        | 231,21  | 9,17   | 656,90  | 59,72                        | 1,92   | 15,87               | 110574,60 | 629,43                  |  |  |  |
|           |         |        |            | 3,00       | 28,31             | 36,006     | 6678,51             | 376,25  | 13,62  | 177,50 | 3040,28                        | 276,39  | 9,19   | 767,55  | 69,78                        | 2,08   | 15,80               | 130156,67 | 1080,18                 |  |  |  |
|           |         |        |            | 4,00       | 37,24             | 47,344     | 8668,12             | 488,35  | 13,53  | 177,50 | 4022,41                        | 365,67  | 9,22   | 969,06  | 88,10                        | 2,34   | 15,65               | 166982,04 | 2525,01                 |  |  |  |
| CC450x85  | 450     | 170    | 25         | 2,00       | 18,97             | 24,136     | 5267,53             | 263,38  | 14,77  | 200,00 | 1301,39                        | 153,10  | 7,34   | 272,66  | 32,08                        | 1,17   | 15,84               | 64483,02  | 321,81                  |  |  |  |
|           |         |        |            | 2,50       | 23,55             | 29,963     | 6493,76             | 324,69  | 14,72  | 200,00 | 1620,94                        | 190,70  | 7,36   | 330,08  | 38,83                        | 1,28   | 15,76               | 78841,94  | 624,22                  |  |  |  |
|           |         |        |            | 3,00       | 28,07             | 35,706     | 7683,97             | 384,20  | 14,67  | 200,00 | 1938,13                        | 228,02  | 7,37   | 383,38  | 45,10                        | 1,38   | 15,69               | 92537,06  | 1071,18                 |  |  |  |
| CC450x85  | 450     | 170    | 25         | 4,00       | 36,93             | 46,944     | 9956,75             | 497,84  | 14,56  | 200,00 | 2565,40                        | 301,81  | 7,39   | 477,99  | 56,23                        | 1,55   | 15,55               | 118011,09 | 2503,68                 |  |  |  |
|           |         |        |            | 2,00       | 20,54             | 26,136     | 7021,08             | 312,05  | 16,39  | 225,00 | 1445,89                        | 170,10  | 7,44   | 272,66  | 32,08                        | 1,10   | 17,26               | 84076,62  | 348,48                  |  |  |  |
|           |         |        |            | 2,50       | 25,51             | 32,463     | 8662,69             | 385,01  | 16,34  | 225,00 | 1801,56                        | 211,95  | 7,45   | 330,08  | 38,83                        | 1,21   | 17,19               | 102854,36 | 676,30                  |  |  |  |
| CC450x85  | 450     | 170    | 25         | 3,00       | 30,43             | 38,706     | 10259,09            | 455,96  | 16,28  | 225,00 | 2154,88                        | 253,52  | 7,46   | 383,38  | 45,10                        | 1,31   | 17,12               | 120783,81 | 1161,18                 |  |  |  |
|           |         |        |            | 4,00       | 40,07             | 50,944     | 13316,79            | 591,86  | 16,17  | 225,00 | 2854,40                        | 335,81  | 7,49   | 477,99  | 56,23                        | 1,46   | 16,97               | 154187,50 | 2717,01                 |  |  |  |

## TOLERANCIAS DE FABRICACION PERFIL C GRADO 50 DOBLE



### TOLERANCIAS

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Longitud:                          | - 0 mm / + 10 mm                  |
| Dimensiones exteriores:            | A; B; C; H = +/- 13/128" (3,0 mm) |
| Espesor de pared:                  | -5% x Espesor nominal             |
| Cuadratura:                        | +/- 3°                            |
| Rectitud (medida desde el centro): | 2.1 mm/m Máximo 12.7 mm           |

# FICHA TÉCNICA

## PERFILES C GRADO 50 y 36

NEGROS Y GALVANIZADOS NTC - 5685

PÓRTICOS - CERCHAS - CORREAS - COLUMNAS - VIGAS - VIGUETAS

NTC 5685:2018

BUREAU VERITAS  
Certification



Perfiles estructurales de acero conformados en frío

CONSORCIO METALÚRGICO NACIONAL SAS



ACERO EN EVOLUCIÓN

## PERFIL C NEGROS Y GALVANIZADOS - GRADO 36



| MIEMBRO |           |          |              | PROPIEDADES SECCIÓN BRUTA |                   |                  |            |                      |                      |                     |                      |                      |                      |                     |                      | PROPIEDADES TORCIONALES |                      |                      |       |                     | UNIDAD DE EMPAQUE |
|---------|-----------|----------|--------------|---------------------------|-------------------|------------------|------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|-------------------------|----------------------|----------------------|-------|---------------------|-------------------|
| CÓDIGO  | ALMA (mm) | ALA (mm) | PESTAÑA (mm) | ESPESOR (mm)              | PESO NEGRO (kg/m) | PESO GALV (kg/m) | ÁREA (cm²) | I <sub>x</sub> (cm⁴) | S <sub>x</sub> (cm³) | R <sub>x</sub> (cm) | Y <sub>cg</sub> (mm) | I <sub>y</sub> (cm⁴) | S <sub>y</sub> (cm³) | R <sub>y</sub> (cm) | X <sub>cg</sub> (cm) | I <sub>xy</sub> (cm⁴)   | R <sub>xy</sub> (cm) | C <sub>w</sub> (cm⁶) | β     | J <sub>t</sub> (cm) |                   |
| C76X38  | 76        | 38       | 10           | 1,20                      | 1,53              | 1,56             | 2,064      | 18,86                | 4,964                | 3,023               | 38,000               | 4,485                | 1,829                | 1,474               | 1,348                | 15,091                  | 4,750                | 67,730               | 0,501 | 9,910               | 100               |
|         |           |          |              | 1,50                      | 1,88              | 1,91             | 2,543      | 22,93                | 6,034                | 3,003               | 38,000               | 5,395                | 2,184                | 1,456               | 1,330                | 18,344                  | 4,705                | 81,174               | 0,503 | 19,074              |                   |
|         |           |          |              | 1,90                      | 2,34              | 2,37             | 3,158      | 27,95                | 7,356                | 2,975               | 38,000               | 6,481                | 2,598                | 1,432               | 1,306                | 22,363                  | 4,645                | 97,312               | 0,505 | 38,006              |                   |
|         |           |          |              | 2,30                      | 2,77              | 2,80             | 3,747      | 32,53                | 8,560                | 2,946               | 38,000               | 7,426                | 2,948                | 1,408               | 1,281                | 26,023                  | 4,583                | 111,613              | 0,508 | 66,071              |                   |
| C100X50 | 100       | 50       | 15           | 1,20                      | 2,08              | 2,12             | 2,640      | 42,90                | 8,581                | 4,031               | 50,000               | 9,466                | 2,837                | 1,893               | 1,664                | 34,324                  | 6,076                | 216,722              | 0,537 | 12,674              | 40                |
|         |           |          |              | 1,50                      | 2,57              | 2,61             | 3,263      | 52,50                | 10,499               | 4,011               | 50,000               | 11,470               | 3,419                | 1,875               | 1,645                | 41,998                  | 6,030                | 262,493              | 0,539 | 24,474              |                   |
|         |           |          |              | 1,90                      | 3,20              | 3,24             | 4,070      | 64,59                | 12,918               | 3,984               | 50,000               | 13,925               | 4,119                | 1,850               | 1,619                | 51,674                  | 5,969                | 318,998              | 0,541 | 48,980              |                   |
|         |           |          |              | 2,30                      | 3,82              | 3,86             | 4,851      | 75,90                | 15,180               | 3,956               | 50,000               | 16,135               | 4,736                | 1,824               | 1,593                | 60,720                  | 5,907                | 370,721              | 0,544 | 85,538              |                   |
| C120X60 | 120       | 60       | 15           | 1,20                      | 2,45              | 2,50             | 3,120      | 73,83                | 12,304               | 4,864               | 60,000               | 15,591               | 3,824                | 2,235               | 1,922                | 59,061                  | 7,171                | 482,047              | 0,557 | 14,978              | 40                |
|         |           |          |              | 1,50                      | 3,04              | 3,09             | 3,863      | 90,64                | 15,107               | 4,844               | 60,000               | 18,971               | 4,630                | 2,216               | 1,903                | 72,515                  | 7,126                | 587,064              | 0,559 | 28,974              |                   |
|         |           |          |              | 1,90                      | 3,80              | 3,85             | 4,830      | 112,06               | 18,677               | 4,817               | 60,000               | 23,165               | 5,618                | 2,190               | 1,877                | 89,649                  | 7,064                | 718,524              | 0,561 | 58,125              |                   |
|         |           |          |              | 2,30                      | 4,54              | 4,59             | 5,771      | 132,34               | 22,056               | 4,789               | 60,000               | 27,005               | 6,507                | 2,163               | 1,850                | 105,869                 | 7,002                | 840,798              | 0,563 | 101,761             |                   |
| C150X50 | 150       | 50       | 15           | 1,20                      | 2,55              | 2,60             | 3,240      | 109,99               | 14,666               | 5,826               | 75,000               | 10,819               | 2,969                | 1,827               | 1,356                | 87,995                  | 7,069                | 507,655              | 0,746 | 15,554              | 40                |
|         |           |          |              | 1,50                      | 3,16              | 3,20             | 4,013      | 135,09               | 18,012               | 5,802               | 75,000               | 13,120               | 3,582                | 1,808               | 1,337                | 108,071                 | 7,026                | 618,358              | 0,748 | 30,099              |                   |
|         |           |          |              | 1,90                      | 3,95              | 4,00             | 5,020      | 167,07               | 22,276               | 5,769               | 75,000               | 15,944               | 4,324                | 1,782               | 1,313                | 133,657                 | 6,967                | 756,789              | 0,751 | 60,412              |                   |
|         |           |          |              | 2,30                      | 4,72              | 4,77             | 6,001      | 197,37               | 26,316               | 5,735               | 75,000               | 18,495               | 4,983                | 1,756               | 1,288                | 157,898                 | 6,907                | 885,261              | 0,754 | 105,816             |                   |
| C160X60 | 160       | 60       | 15           | 1,20                      | 2,83              | 2,88             | 3,600      | 143,16               | 17,895               | 6,306               | 80,000               | 17,128               | 3,952                | 2,181               | 1,666                | 114,531                 | 7,941                | 892,706              | 0,706 | 17,282              | 40                |
|         |           |          |              | 1,50                      | 3,51              | 3,56             | 4,463      | 176,17               | 22,021               | 6,283               | 80,000               | 20,852               | 4,790                | 2,161               | 1,647                | 140,937                 | 7,897                | 1090,838             | 0,708 | 33,474              |                   |
|         |           |          |              | 1,90                      | 4,40              | 4,45             | 5,590      | 218,47               | 27,308               | 6,251               | 80,000               | 25,477               | 5,819                | 2,135               | 1,621                | 174,772                 | 7,837                | 1340,728             | 0,710 | 67,271              |                   |
|         |           |          |              | 2,30                      | 5,26              | 5,32             | 6,691      | 258,81               | 32,351               | 6,219               | 80,000               | 29,721               | 6,748                | 2,108               | 1,596                | 207,049                 | 7,777                | 1575,037             | 0,713 | 117,983             |                   |
| C203X64 | 203       | 64       | 19           | 1,20                      | 3,39              | 3,45             | 4,308      | 266,58               | 26,264               | 7,866               | 101,500              | 23,581               | 5,014                | 2,339               | 1,697                | 213,262                 | 9,352                | 2000,240             | 0,770 | 20,681              | 30                |
|         |           |          |              | 1,50                      | 4,20              | 4,27             | 5,348      | 328,84               | 32,398               | 7,841               | 101,500              | 28,799               | 6,100                | 2,321               | 1,679                | 263,070                 | 9,309                | 2451,168             | 0,772 | 40,112              |                   |
|         |           |          |              | 1,90                      | 5,28              | 5,34             | 6,711      | 409,14               | 40,310               | 7,808               | 101,500              | 35,344               | 7,448                | 2,295               | 1,655                | 327,315                 | 9,251                | 3023,938             | 0,774 | 80,760              |                   |
|         |           |          |              | 2,30                      | 6,33              | 6,39             | 8,048      | 486,37               | 47,918               | 7,774               | 101,500              | 41,426               | 8,685                | 2,269               | 1,630                | 389,096                 | 9,193                | 3565,434             | 0,776 | 141,912             |                   |
| C220X80 | 220       | 80       | 19           | 1,20                      | 3,85              | 3,92             | 4,896      | 368,15               | 33,469               | 8,671               | 110,000              | 41,290               | 7,098                | 2,904               | 2,183                | 294,523                 | 10,752               | 4001,488             | 0,723 | 23,503              | 24                |
|         |           |          |              | 1,50                      | 4,78              | 4,85             | 6,083      | 454,93               | 41,358               | 8,648               | 110,000              | 50,606               | 8,671                | 2,884               | 2,164                | 363,947                 | 10,708               | 4918,106             | 0,725 | 45,624              |                   |
|         |           |          |              | 1,90                      | 6,01              | 6,08             | 7,642      | 567,39               | 51,581               | 8,616               | 110,000              | 62,412               | 10,647               | 2,858               | 2,138                | 453,913                 | 10,649               | 6091,374             | 0,727 | 91,963              |                   |
|         |           |          |              | 2,30                      | 7,21              | 7,29             | 9,175      | 676,15               | 61,468               | 8,585               | 110,000              | 73,524               | 12,488               | 2,831               | 2,112                | 540,921                 | 10,590               | 7210,703             | 0,729 | 161,785             |                   |
| C250X75 | 250       | 75       | 25           | 1,50                      | 5,16              | 5,24             | 6,563      | 609,10               | 48,728               | 9,634               | 125,000              | 50,222               | 9,123                | 2,766               | 1,995                | 487,280                 | 11,341               | 6579,766             | 0,781 | 49,224              | 30                |
|         |           |          |              | 1,90                      | 6,49              | 6,56             | 8,250      | 760,37               | 60,830               | 9,600               | 125,000              | 62,007               | 11,216               | 2,741               | 1,972                | 608,297                 | 11,284               | 8152,330             | 0,783 | 99,279              |                   |
|         |           |          |              | 2,30                      | 7,79              | 7,87             | 9,911      | 906,98               | 72,558               | 9,566               | 125,000              | 73,132               | 13,172               | 2,716               | 1,948                | 725,585                 | 11,226               | 9653,528             | 0,785 | 174,763             |                   |
|         |           |          |              | 1,50                      | 4,80              | 4,88             | 6,113      | 559,92               | 44,088               | 9,570               | 127,000              | 30,685               | 6,223                | 2,240               | 1,469                | 447,938                 | 10,624               | 4018,172             | 0,856 | 45,849              |                   |
| C254X64 | 254       | 64       | 19           | 1,90                      | 6,04              | 6,11             | 7,680      | 697,95               | 54,957               | 9,533               | 127,000              | 37,662               | 7,602                | 2,214               | 1,446                | 558,361                 | 10,567               | 4966,426             | 0,858 | 92,420              | 30                |
|         |           |          |              | 2,30                      | 7,25              | 7,32             | 9,221      | 831,27               | 65,454               | 9,495               | 127,000              | 44,147               | 8,870                | 2,188               | 1,423                | 665,013                 | 10,510               | 5866,268             | 0,859 | 162,596             |                   |
|         |           |          |              | 1,50                      | 5,40              | 5,49             | 6,878      | 870,55               | 57,085               | 11,250              | 152,500              | 32,152               | 6,311                | 2,162               | 1,305                | 696,440                 | 12,037               | 6051,097             | 0,906 | 51,587              |                   |
|         |           |          |              | 1,90                      | 6,80              | 6,88             | 8,649      | 1086,69              | 71,258               | 11,209              | 152,500              | 39,461               | 7,713                | 2,136               | 1,284                | 869,353                 | 11,980               | 7487,499             | 0,907 | 104,081             |                   |
| C305X64 | 305       | 64       | 19           | 2,30                      | 8,17              | 8,25             | 10,394     | 1296,14              | 84,993               | 11,167              | 152,500              | 46,253               | 9,003                | 2,110               | 1,262                | 1036,910                | 11,923               | 8853,656             | 0,909 | 183,280             | 20                |
|         |           |          |              | 1,50                      | 5,78              | 5,87             | 7,358      | 981,08               | 64,333               | 11,547              | 152,500              | 55,540               | 8,942                | 2,747               | 1,789                | 784,868                 | 12,838               | 10194,833            | 0,855 | 55,187              |                   |
|         |           |          |              | 1,90                      | 7,28              | 7,36             | 9,257      | 1226,33              | 80,415               | 11,510              | 152,500              | 68,507               | 10,988               | 2,720               | 1,765                | 981,066                 | 12,780               | 12656,026            | 0,856 | 111,397             |                   |
|         |           |          |              | 2,30                      | 8,25              | 8,34             | 11,130     | 1464,73              | 96,048               | 11,472              | 152,500              | 80,716               | 12,897               | 2,693               | 1,741                | 1171,785                | 12,723               | 15014,747            | 0,858 | 196,258             |                   |
| 355X110 | 355       | 110      | 25           | 1,90                      | 9,03              | 9,21             | 11,575     | 2176,97              | 122,646              | 13,714              | 177,500              | 173,265              | 20,873               | 3,869               | 2,699                | 1741,576                | 15,958               | 43002,289            | 0,797 | 139,290             | 16                |
|         |           |          |              | 2,30                      | 10,95             | 11,06            | 13,936     | 2607,89              | 146,924              | 13,680              | 177,500              | 205,705              | 24,707               | 3,842               | 2,674                | 2086,315                | 15,900               | 51258,137            | 0,799 | 245,737             |                   |

Los perfiles de sección abierta cumplen con la norma NTC 5685, ASTM A-1011 Grado 36. Para espesores de 1,2 - 1,5 - 1,9 - 2,3 mm= Esfuerzo de Fluencia mínimo Fy=2.530 kg/cm² (36.000psi (253 Mpa) Fu= 3.866 kg/cm² (55.000 psi) (387 Mpa). Elongación 2"del 21%.

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