



WINDOR

INDÚSTRIA E COMÉRCIO DE METAIS

CATÁLOGO | CONSTRUÇÃO CIVIL

A Windor Indústria e Comércio de Metais, empresa de capital nacional, fundada em 23 de maio de 2017 com o objetivo de atuar no segmento de fabricação de portas e janelas em alumínio para edificações no ramo da construção civil e mercado de revenda.

Em nosso processo produtivo, temos desde a extrusão, pintura e anodização do perfil, juntamente com o ciclo de fabricação completo das esquadrias, garantindo assim maior qualidade do produto.

Perseguindo nossas convicções e metas, não temos poupado esforços e investimentos em recursos humanos e materiais, de forma a auferir confiabilidade, aos nossos produtos e serviços, bem como longevidade à nossa empresa.

Com unidades nos estados de São Paulo e Goiás, a Windor Indústria e Comércio de Metais, atua com excelência em extrusão, anodização e pintura eletrostática, sendo hoje uma das maiores fabricantes de perfis de alumínio do país.

Pela sua localização estratégica, distribui para todas as regiões através da sua unidade de produção de goiás.

Se destaca no mercado em que atua, por oferecer aos seus clientes produtos de extrema qualidade, concebidos através de processos tecnológicos de última geração e práticas de desenvolvimento sustentável.



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PROPRIEDADES FÍSICAS TÍPICAS

| Liga | Peso Específico (g/cm ³) | Módulo de Elasticidade Mpa | Módulo de Rigidez MPa | Temperatura de fusão (°C) | Calor Específico (0-100°C) (Cal./g°C) | Coefficiente Expansão Linear (L/°C) | Condutibilidade Térmica (25°C) (Cal./cm°C) | Condutabilidade Elétrica (ACS) % |
|------|--------------------------------------|----------------------------|-----------------------|---------------------------|---------------------------------------|-------------------------------------|--|----------------------------------|
| 1050 | 2.70 | 70000 | 26500 | 650-660 | 0.22 | 24x10 ⁻⁶ | 0.50 | 60.0 |
| 3003 | 2.73 | 70000 | 26500 | 640-655 | 0.22 | 23x10 ⁻⁶ | 0.38 | 43.0 |
| 5052 | 2.68 | 72000 | 27500 | 595-650 | 0.23 | 23x10 ⁻⁶ | 0.33 | 34.0 |
| 6060 | 2.71 | 70000 | 26500 | 600-650 | 0.21 | 23x10 ⁻⁶ | 0.48 | 52.0 |
| 6063 | 2.71 | 70000 | 26500 | 600-650 | 0.21 | 23x10 ⁻⁶ | 0.48 | 52.0 |
| 6463 | 2.71 | 70000 | 26500 | 600-650 | 0.21 | 23x10 ⁻⁶ | 0.48 | 52.0 |
| 6005 | 2.71 | 70000 | 26500 | 580-650 | 0.22 | 24x10 ⁻⁶ | 0.37 | 40.0 |
| 6061 | 2.71 | 70000 | 26500 | 580-650 | 0.22 | 24x10 ⁻⁶ | 0.37 | 40.0 |
| 6082 | 2.71 | 70000 | 26500 | 555-650 | 0.21 | 24x10 ⁻⁶ | 0.44 | 45.5 |
| 6101 | 2.71 | 70000 | 26500 | 605-655 | 0.22 | 23x10 ⁻⁶ | 0.49 | 55.0 |
| 6261 | 2.71 | 70000 | 26000 | 570-655 | 0.22 | 23x10 ⁻⁶ | 0.44 | 47.0 |
| 6262 | 2.71 | 70000 | 26700 | 582-652 | 0.21 | 23x10 ⁻⁶ | 0.37 | 44.0 |
| 6351 | 2.71 | 70000 | 26500 | 555-650 | 0.21 | 24x10 ⁻⁶ | 0.44 | 45.5 |
| 7075 | 2.80 | 73000 | 27500 | 475-630 | 0.23 | 24x10 ⁻⁶ | 0.29 | 30.0 |

LIMITES DE COMPOSIÇÃO QUÍMICA (% EM PESO)

| Liga | Ai | Si | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Cada | Total |
|--------|-------|--------------|--------------|--------------|-------------|--------------|--------------|------------|--------------|------|-------|
| 1050 | 99.50 | 0.25 | 0.40 | 0.05 | 0.05 | 0.05 | - | 0.05 | 0.03 | 0.03 | - |
| 3003 | - | 0.6 | 0.7 | 0.05 0.20 | 1.0 1.5 | - | - | 0.10 | - | 0.05 | 0.15 |
| 5052 | - | 0.25 | 0.40 | 0.10 | 0.10 | 2.2 2.8 | 0.15 0.35 | 0.10 | - | 0.05 | 0.15 |
| 6005 | - | 0.6 0.9 | 0.35 | 0.10 | 0.10 | 0.4 0.6 | 0.10 | 0.10 | 0.10 | 0.05 | 0.15 |
| 6005 A | - | 0.5 0.9 | 0.35 | 0.30 | 0.50 | 0.4 0.7 | 0.30 | 0.20 | 0.10 | 0.05 | 0.15 |
| 6060 | - | 0.30 0.60 | 0.10 0.30 | 0.10 | 0.10 | 0.35 0.60 | 0.05 | 0.10 | 0.10 | 0.05 | 0.15 |
| 6063 | - | 0.20 0.60 | 0.35 | 0.10 | 0.10 | 0.45 0.9 | 0.10 | 0.10 | 0.10 | 0.05 | 0.15 |
| 6061 | - | 0.40 0.8 | 0.7 | 0.15 0.40 | 0.15 | 0.8 1.2 | 0.04 0.35 | 0.25 | 0.15 | 0.05 | 0.15 |
| 6082 | - | 0.7 1.3 | 0.5 | 0.10 | 0.4 1.0 | 0.6 1.2 | 0.25 | 0.20 | 0.10 | 0.05 | 0.15 |
| 6261 | - | 0.40 0.7 | 0.40 | 0.15 0.40 | 1.0 0.35 | 0.6 1.2 | 0.25 | 0.20 | 0.10 | 0.05 | 0.15 |
| 6262 | - | 0.40 0.8 | 0.7 | 0.15 0.40 | 0.15 | 0.8 1.2 | 0.04 0.14 | 0.25 | 0.15 | 0.05 | 0.15 |
| 6351 | - | 0.7 1.3 | 0.50 | 0.10 | 0.40 0.8 | 0.40 0.8 | - | 0.20 | 0.20 | 0.05 | 0.15 |
| 6463 | - | 0.30 0.60 | 0.15 | 0.05 0.20 | 0.05 | 0.35 0.65 | - | 0.03 | 0.01 0.03 | 0.05 | 0.15 |
| 7075 | - | 0.40 | 0.50 | 1.2 2.0 | 0.30 | 2.1 2.9 | 0.18 0.28 | 5.1 6.1 | 0.20 | 0.05 | 0.15 |

* Apresenta em sua composição Pb= 0.20-0.60% e Bi= 0.20-0.60%

** Boro 0.05% máximo

*** Apresenta em sua composição Pb= 0.40-0.70% e Bi= 0.40-

0.70%

PROPRIEDADES FÍSICAS TÍPICAS

| Liga | Características | Aplicações Típicas |
|--------|--|--|
| 1050 | Baixa resistência mecânica, alta resistência à corrosão, boa conformabilidade, fácil de soldar, apropriada para anodização decorativa. | Indústria química, farmacêutica e alimentícia; utensílios domésticos. Refrigeração (trocadores de calor em geral). |
| 3003 | Média resistência mecânica, alta resistência à corrosão, boa conformabilidade, boa soldabilidade. | Tubos para trocadores de calor (radiadores automotivos). Antenas. |
| 5052 | Boa resistência mecânica, alta resistência à corrosão, boa conformabilidade. | Vergalhões para rebites, transporte e equipamentos. |
| 6005 A | Boa resistência mecânica, alta resistência à corrosão, boa conformabilidade, e média usinabilidade. | Rodas e acessórios de bicicletas esportivas e motocicletas, náutica e transporte em geral. |
| 6060 | Média resistência mecânica, alta resistência à corrosão, boa conformabilidade. | Perfis para construção civil, caixilharia em geral, tubos de irrigação. |
| 6063 | Apropriada para anodização decorativa fosca | Móveis e iluminação. |
| 6061 | Boa resistência mecânica, boa resistência à corrosão, boa conformabilidade, e média usinabilidade. | Estruturas, construção naval, veículos e rebites. Indústria moveleira. |
| 6101 | Alta condutividade elétrica, média resistência mecânica, boa resistência à corrosão. | Liga especial para fins elétricos e barramentos (estruturas). |
| 6261 | Boa resistência mecânica, boa resistência à corrosão, boa conformabilidade, e média usinabilidade. | Carrocerias de veículos, estruturas e equipamentos. |
| 6262 | Ótima usinabilidade, alta resistência mecânica, alta resistência à corrosão, apropriada para anodização decorativa. | Peças usinadas em torno automático. Excelente alternativa para o latão de corte livre. |
| 6351 | Boa resistência mecânica, alta resistência à corrosão, boa conformabilidade, e média usinabilidade. | Engenharia estrutural, construção de navios, veículos e equipamentos. Peças usinadas em tornos não automáticos. Forjamento a frio. |
| 6463 | Média resistência mecânica, boa resistência à corrosão, boa conformabilidade, apropriada para anodização decorativa de alto brilho. | Painéis e frisos para eletrodomésticos, automóveis e armários. |
| 7075 | Os mais altos valores de resistência mecânica, média resistência à corrosão, boa forjabilidade e usinabilidade. | Peças sujeitas aos mais altos esforços mecânicos e indústria aeronáutica, militar, máquinas e equipamentos. Moldes para injeção de plástico. |

PROPRIEDADES MECÂNICAS

| Liga | Têmpera | Limite de resistência à tração MPa | Limite convencional de escoamento MPa | Limite de resistência ao cisalhamento (MPa) | % de alongamento em 50mm | Dureza brinell 2.5/62,5 |
|--------|---------|------------------------------------|---------------------------------------|---|--------------------------|-------------------------|
| 1050 | O | 95 (80) | - (30) | (62) | 25 | - |
| | H14 | 85 (100) | - 70 (80) | (72) | - | - |
| | H18 | 110 (130) | - 90 (100) | (76) | - | - |
| 3003 | O | 130 (120) | - - | (76) | 25 | - |
| | H12 | 115 (140) | - - | - | - | - |
| | H14 | 140 (151) | - - | (97) | - | - |
| | H16 | 165 - | - - | (103) | - | - |
| | H18 | 185 - | - - | (110) | - | - |
| 5052 | O | 220 (209) | - - | (123) | 25 | - |
| | H32 | 215 (227) | 160 (183) | - | - | - |
| | H34 | 233 (260) | 180 (235) | (144) | - | - |
| | H36 | 255 - | 200 (250) | (165) | - | - |
| | H38 | 270 - | - - | (165) | - | - |
| 6005 A | T6F | 260 (270) | 215 (230) | - | 10 | 82 |
| 6060 | O | 130 (125) | - - | (76) | 18 | - |
| 6063 | T4A | 110 (145) | 60 (79) | (98) | - | - |
| 6463 | T5 | 150 (219) | 110 (189) | (118) | 8 | 66 |
| | T6C | 180 (226) | 150 (197) | (135) | - | - |
| | T^ | 205 (235) | 170 (213) | - | 8 | - |
| 6061 | O | 150 - | 110 - | (82) | 16 | - |
| | T4 | 180 (211) | 110 (129) | (165) | 16 | - |
| | T6 | 260 (309) | 240 (280) | (206) | 8 | (102) |
| | T6* | 290 (351) | 240 (332) | - | 10 | (105) |
| | T8 | - (368) | - (348) | (100) | - | - |
| | T89 | 370 - | - 325 - | - | - | - |
| 6261 | T4A | 157 (186) | 83 (108) | - | - | - |
| | T4 | 181 (199) | 98 (123) | - | - | - |
| | T6C | 229 (280) | 199 (248) | - | 10 | (90) |
| | T6 | 260 (309) | 240 (280) | - | 8 | (102) |
| 6351 | T4 | 220 (227) | 130 (121) | (152) | 16 | (64) |
| | T6 | 290 (315) | 255 (288) | (201) | 8 | (106) |
| 6101 | O | - (137) | - (82) | - | - | - |
| | T6 | 200 (230) | 172 (213) | - | - | - |
| 6262 | T6 | 260 - | - - | - | 10 | - |
| | T9 | 360 (390) | - 330 (370) | - | 5 | (111) |
| 7075 | O | 275 - | 165 - | - | - | - |
| | T6 | 560 (630) | 495 (608) | (329) | - | - |

Dados de tensão expressos na Unidade MEGAPASCAL (MPa) equivalentes a 1N/mm². A medida da unidade Kgf/mm² é obtida dividindo-se o valor indicado por 9,807. Para a conversão de MPa em KSI divide-se por 6,894. Os valores sem parênteses são os mínimos especificados, com exceção da têmpera O (recozido) onde são indicadas as máximas propriedades resistentes. Os valores entre parênteses são os típicos esperados. Todas as ligas podem ser fornecidas na têmpera F, sem garantia de propriedades mecânicas. Os valores mínimos e típicos mostrados referem-se aos produtos mais utilizados nas ligas/têmperas indicadas. Diferentes espessuras de parede e/ou diâmetros podem levar as alterações nos mínimos especificados e típicos esperados. Para maiores informações consultar a área comercial da Divisão de Extrusados. Têmpera T6 para material treliado com passo de calibragem.

ALTURA E LARGURA

TUBOS QUADRADOS, RETANGULARES, SEXTAVADOS E OITAVADOS

| parede (mm) | DESVIO PERMISSÍVEL DA ALTURA OU LARGURA EM RELAÇÃO À DIMENSÃO NOMIAL (+-mm) | | |
|-----------------|---|---|--|
| | NOS CANTOS | EM LADOS OPOSTOS ⁽¹⁾ | |
| | Tubos quadrados e retangulares | Tubos quadrados, sextavados e oitavados | Tubos retangulares |
| | TUBOS EXTRUDADOS | | |
| 12,70 a 19,5 | 0,30 | 0,51 | A tolerância para a largura é o valor da tolerância para uma dimensão igual à altura e inversamente, mas em nenhum caso esta tolerância é menor do que nos cantos ⁽²⁾ |
| 19,6 a 25,40 | 0,36 | 0,51 | |
| 25,41 a 50,80 | 0,46 | 0,63 | |
| 50,81 a 101,60 | 0,63 | 0,89 | |
| 101,61 a 126,70 | 0,89 | 1,14 | |
| 126,71 a 152,40 | 1,14 | 1,40 | |

(1) Não aplicável na têmpera O, tubos em rolos ou tubos cuja a espessura da parede for inferior a 0,5mm ou 2,5% do diâmetro externo ou diâmetro da circunferência equivalente (diâmetro do círculo cuja circunferência mede o perímetro do tubo)

(2) Exemplo: em um tubo retangular extrudado de 76,20x34,10mm a tolerância da largura (76,20) é de +- 0,63mm e na altura (38,10) é de +- 0,89mm.

ESPESSURA DA PAREDE

TUBOS EXTRUSADOS

| TUBOS REDONDOS EXTRUDADOS | | | | | |
|----------------------------------|--|---------------|----------------|----------------|--|
| Espessura nominal da parede (mm) | Desvio permissível da espessura média AA+BB/2 em relação à espessura nominal (+- mm) | | | | Desvio permissível da espessura em qualquer ponto em relação à espessura média (excentricidade) (+-mm) |
| | DIÂMETRO EXTERNO (mm) | | | | |
| | Até 31,75 | 31,75 a 76,19 | 76,20 a 126,99 | Acima de 127,0 | 10% da espessura média da parede. Máximo: 1,52 Mínimo: 0,25 |
| Até 1,19 | 0,15 | - | - | - | |
| 1,20 a 1,55 | 0,18 | 0,20 | 0,20 | 0,25 | |
| 1,56 a 1,95 | 0,20 | 0,20 | 0,23 | 0,30 | |
| 1,96 a 3,15 | 0,23 | 0,23 | 0,25 | 0,38 | |
| 3,16 a 6,34 | 0,23 | 0,23 | 0,33 | 0,51 | |
| 6,35 a 9,51 | 0,28 | 0,28 | 0,41 | 0,63 | |
| 9,52 a 12,69 | - | 0,38 | 0,53 | 0,89 | |
| 12,70 a 19,04 | - | 0,51 | 0,71 | 1,14 | |

| TUBOS QUADRADOS, RETANGULARES, SEXTAVADOS E OITAVADOS - EXTRUDADOS | | | | |
|--|--|-----------------|-----------------|--|
| Espessura nominal da parede (mm) | Desvio permissível da espessura média AA+BB/2 em relação à espessura nominal (+- mm) | | | Desvio permissível da espessura em qualquer ponto em relação à espessura média (excentricidade) (+-mm) |
| | DIÂMETRO DO CÍRCULO CIRCUNSCRITO | | | |
| | Menor que 127,0 | Maior que 127,0 | Menor que 127,0 | Maior que 127,0 |
| Até 1,19 | 0,13 | 0,20 | 0,13 | 10% da espessura média da parede. Máximo: 1,52 Mínimo: 0,25 |
| 1,20 a 1,55 | 0,15 | 0,23 | 0,18 | |
| 1,56 a 1,95 | 0,18 | 0,25 | 0,25 | |
| 1,96 a 3,15 | 0,18 | 0,25 | 0,25 | |
| 3,16 a 6,34 | 0,20 | 0,38 | 0,36 | |
| 6,35 a 9,51 | 0,28 | 0,51 | 0,63 | |
| 9,52 a 12,69 | 0,36 | 0,76 | 0,76 | |
| 12,70 a 19,04 | 0,63 | 1,02 | 1,02 | |

EXTRUSÃO

Para os produtos extrudados são adotadas as tolerâncias contidas na norma ABNT NBR 8116-Alumínio e suas ligas que é baseada na ASTM (ANSI H35.2-M). Dadas as necessidades de constante atualização da norma NBR 8116, devido aos avanços das indústrias produtoras de alumínio e as necessidades cada vez maiores das indústrias usuárias de perfis extrudados, os valores constantes desta tabela estão sujeitos à mudanças. Neste trabalho, apresentamos apenas a tabela mais usual, sendo que informações complementares poderão ser obtidas com técnicos da Windor. A tabela apresenta as tolerâncias padronizadas. Quando nenhuma tolerância é mostrada deve ser estabelecida de comum acordo entre o comprador e fornecedor.

TOLERÂNCIA NA SEÇÃO TRANSVERSAL DO PERFIL

| Dimensão nominal (mm) | Tolerância - para mais e para menos (mm) (C) (D) | | | | | | | |
|-----------------------|---|--|--|---------|---|-----------|-----------|------|
| | Dimensões do metal | | | | Dimensões entre superfícies metálicas | | | |
| | Dimensão nominal onde 75% ou mais é metal (E) (F) | | | | Desvio permissível da dimensão nominal quando mais de 25% da dimensão for vazio (G) (H) | | | |
| | Todas as dimensões exceto aquelas incluídas na coluna 3 | Espessuras de parede, circundando um vazio de 70mm ou mais (I) (J) | Nas dimensões medidas a uma distância "A" da base da aba | | | | | |
| 5 a 15 | | | 15 a 30 | 30 a 60 | 60 a 100 | 100 a 150 | 150 a 200 | |
| Coluna | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Até 3,2 | 0,15 | | 0,25 | 0,30 | - | - | - | - |
| 3,2 a 6,3 | 0,18 | | 0,30 | 0,36 | 0,41 | - | - | - |
| 6,3 a 12,5 | 0,20 | | 0,36 | 0,41 | 0,46 | 0,50 | - | - |
| 12,5 a 20 | 0,23 | +/- 10% da espessura especificada | 0,41 | 0,46 | 0,50 | 0,56 | - | - |
| 20 a 25 | 0,25 | | 0,46 | 0,50 | 0,56 | 0,64 | 0,76 | - |
| 25 a 40 | 0,30 | | 0,54 | 0,58 | 0,66 | 0,76 | 0,88 | - |
| 40 a 50 | 0,36 | Máximo +/- 1,50 | 0,60 | 0,66 | 0,78 | 0,92 | 1,05 | 1,25 |
| 50 a 100 | 0,60 | Mínimo +/- 0,25 | 0,86 | 0,96 | 1,20 | 1,45 | 1,70 | 2,05 |
| 100 a 150 | 0,86 | | 1,10 | 1,25 | 1,65 | 2,00 | 2,40 | 2,80 |
| 150 a 200 | 1,10 | | 1,35 | 1,55 | 2,40 | 2,50 | 3,05 | 3,55 |
| 200 a 250 | 1,35 | | 1,65 | 1,90 | 2,50 | 3,05 | 3,70 | 4,30 |

Vergalhões, barras e perfis extrudados. Tolerâncias na seção transversal em milímetros para mais ou para menos. Essas tolerâncias aplicam-se a perfis extrudados exceto na têmpera O (estado cozido) e têmpera F (como fabricado). (A) Estas tolerâncias - padrão aplicam-se a perfis comuns; podem ser necessárias tolerâncias mais amplas para alguns perfis e podem ser possíveis tolerâncias mais estreitas para outros, dependendo do acordo prévio entre o comprador e o fornecedor. (B) As tolerâncias para perfis extrudados nas ligas e têmperas especiais devem ser negociadas entre o comprador e o fornecedor. (C) A tolerância aplicável a uma dimensão composta de 2 ou mais componentes é a soma das tolerâncias das dimensões componentes, se todas elas forem indicadas. (D) Se uma tolerância dimensional especificada não for simétrica, então o valor da tolerância - padrão a ser aplicado é aquele que seria aplicado à média das dimensões máxima e mínima permissíveis pela tolerância inicialmente especificada.

RETILINEARIDADE

| Diâmetro do menor círculo circunscrito (mm) ¹ | Espessura mínima (mm) | Desvio (D) permissível por metro de comprimento (mm) ² |
|--|-----------------------|---|
| Até 38,09 | Até 2,4 | 4,0 |
| Até 38,09 | Acima de 2,4 | 1,0 |
| Acima de 38,10 | Qualquer | 1,0 |

TORÇÃO

| Diâmetro do menor círculo circunscrito (mm) ¹ | Desvio (Y) permissível (graus) | | |
|--|--------------------------------|-----------------------|-----------------------|
| | por metro de comprimento | comprimento total | torção máxima |
| Até 38,09 | Dimensão nominal (mm) | Dimensão nominal (mm) | Dimensão nominal (mm) |
| De 38,09 a 76,19 | | | |
| Acima de 76,20 | | | |

COMPRIMENTO

| Diâmetro do menor círculo circunscrito (mm) ¹ | Desvio permissível em relação ao comprimento nominal (somente a mais) (mm) | | |
|--|--|-------------|--------------|
| | Comprimento nominal (mm) | | |
| | Até 3600 | 3661 a 9150 | 9151 a 15250 |
| Até 76,19 | 3,2 | 6,4 | 9,5 |
| 76,20 a 203,19 | 4,8 | 7,9 | 11,1 |
| Acima de 203,20 | 6,4 | 9,5 | 12,7 |

ANGULARIDADE

| Diâmetro do menor círculo circunscrito (mm) ¹ | Desvio permissível em relação ao ângulo nominal (graus) ⁴ |
|--|--|
| Até 4,75 | +/- 2,0 |
| 4,76 a 19,04 | +/- 1,5 |
| Acima de 19,05 | +/- 1,0 |

CORTE FINAL


Desvio permissível do quadro +/- 1°
 (1) para vergalhões diâmetro nominal, para barras largura nominal.
 (2) para obter o desvio permissível em barras de mais de 1 metro de comprimento multiplica-se o valor em metros pelo valor do desvio por metro.
 (3) quando houver 2 abas adjacentes considera-se a de menor espessura.
 (4) quando o espaço limitado pelo ângulo é todo metal, considera-se a menor espessura de metal no vértice do ângulo.

DIÂMETROS TUBOS REDONDOS

| Diâmetro nominal (mm) | Desvio permissível do diâmetro médio AA+BB/2 em relação ao diâmetro nominal (+-mm) | Desvio permissível do diâmetro em qualquer ponto em relação ao diâmetro nominal (+- mm) ⁽¹⁾ |
|-----------------------|--|--|
| TUBOS EXTRUDADOS | | |
| 6,35 a 25,39 | 0,25 | 0,51 |
| 25,40 a 50,79 | 0,30 | 0,64 |
| 50,80 a 101,59 | 0,38 | 0,76 |
| 101,60 a 152,39 | 0,64 | 1,27 |
| 152,40 a 203,19 | 0,89 | 1,90 |
| 203,20 a 253,99 | 1,14 | 2,54 |


(1) Não aplicável na têmpera O, tubos em rolos ou tubos cuja a espessura da parede for inferior a 0,5mm ou 2,5% do diâmetro externo ou diâmetro da circunferência equivalente (diâmetro do círculo cuja circunferência mede o perímetro do tubo)

CANTONEIRA DE ABAS IGUAIS


|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | POLEGADA | |
|---|----------------|---------------------------|-----------|------|----------|-------|
| | | | A | C | A | C |
| AT-0019 | 0,069 | 0,414 | 12,7 | 1,20 | 1/2" | 1/16" |
| AT-0020 | 0,096 | 0,576 | 15,9 | 1,15 | 5/8" | 1/16" |
| AT-0150 | 0,141 | 0,846 | 25,4 | 1,00 | 1" | 1/32" |
| AT-0151 | 0,102 | 0,612 | 19,1 | 1,00 | 3/4" | 1/32" |
| AT-0287 | 1,650 | 9,900 | 49,2 | 6,30 | 1.15/16" | 1/4" |
| AT-0598 | 0,567 | 3,402 | 50,8 | 2,18 | 2" | 3/32" |
| AT-0682 | 0,120 | 0,720 | 15,9 | 1,50 | 5/8" | 1/16" |
| AT-1230* | 0,430 | 2,578 | 25,4 | 3,17 | 1" | 1/8" |
| AT-1231* | 0,335 | 2,013 | 38,1 | 1,58 | 1.1/2" | 1/16" |
| AT-1232* | 0,659 | 3,952 | 38,1 | 3,17 | 1.1/2" | 1/8" |

SOB CONSULTA *

CANTONEIRA DE CANTO ARREDONDADO

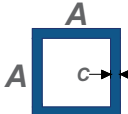
|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | POLEGADA | |
|---|----------------|---------------------------|-----------|------|----------|-------|
| | | | A | C | A | C |
| AT-0735 | 0,096 | 0,576 | 15,9 | 1,00 | 5/8" | 1/32" |
| AT-0736 | 0,141 | 0,846 | 25,4 | 1,01 | 1" | 1/32" |
| AT-0737 | 0,105 | 0,630 | 19,1 | 1,00 | 3/4" | 1/32" |

CANTONEIRA DE ABAS DESIGUAIS

|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | | POLEGADA | | |
|---|----------------|---------------------------|-----------|------|------|----------|------|-------|
| | | | A | B | C | A | B | C |
| AT-1102 | 0,277 | 1,662 | 31,75 | 19,0 | 2,00 | 1.1/4" | 3/4" | 3/32" |
| AT-1233* | 0,659 | 3,952 | 50,8 | 25,4 | 3,17 | 2" | 1" | 1/8" |

SOB CONSULTA *

TUBO QUADRADO

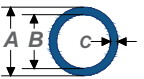
|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | POLEGADA | |
|---|----------------|---------------------------|-----------|------|----------|-------|
| | | | A | C | A | C |
| AT-0017 | 0,614 | 3,684 | 50,8 | 1,20 | 2" | 1/16" |
| AT-0206 | 0,787 | 4,722 | 50,8 | 1,40 | 2" | 1/16" |
| AT-0392 | 0,205 | 1,230 | 19,0 | 1,00 | 3/4" | 1/32" |
| AT-0688 | 1,916 | 11,496 | 100,0 | 1,80 | 4" | 1/16" |
| AT-1106 | 0,625 | 3,750 | 38,1 | 1,50 | 1.1/2" | 1/16" |
| AT-1132 | 0,243 | 1,458 | 19,0 | 1,20 | 3/4" | 1/16" |
| AT-1234* | 0,200 | 1,200 | 12,7 | 1,58 | 1/2" | 1/16" |
| AT-1235* | 0,428 | 2,570 | 25,4 | 1,58 | 1" | 1/16" |

TUBO RETANGULAR

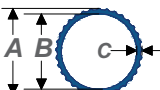
|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | | POLEGADA | | |
|---|----------------|---------------------------|-----------|------|------|----------|----------|-------|
| | | | A | B | C | A | B | C |
| AT-0018 | 1,442 | 8,652 | 101,6 | 50,6 | 1,70 | 4" | 2" | 1/16" |
| AT-0032 | 0,422 | 2,532 | 50,8 | 25,4 | 1,00 | 2" | 1" | 1/32" |
| AT-0207 | 1,192 | 7,152 | 101,6 | 50,8 | 1,40 | 4" | 2" | 1/16" |
| AT-0246 | 0,686 | 4,116 | 50,8 | 37,7 | 1,40 | 2" | 1.15/32" | 1/32" |
| AT-0288 | 0,205 | 1,230 | 25,4 | 12,7 | 1,00 | 1" | 1/2" | 1/32" |
| AT-0590 | 0,350 | 2,100 | 50,8 | 12,7 | 1,50 | 2" | 1/2" | 1/16" |
| AT-0611 | 0,176 | 1,056 | 20,0 | 13,0 | 1,00 | 25/32" | 1/2" | 1/32" |
| AT-0921 | 0,262 | 1,572 | 25,4 | 12,7 | 1,30 | 1" | 1/2" | 1/16" |
| AT-1020 | 0,632 | 3,792 | 55,0 | 40,0 | 1,20 | 2.3/16" | 1.19/32" | 1/16" |
| AT-1021 | 0,795 | 4,770 | 70,0 | 40,0 | 1,30 | 2.3/4" | 1.9/16" | 1/16" |
| AT-1105 | 0,950 | 5,700 | 76,2 | 38,1 | 1,50 | 3" | 1.1/2" | 1/16" |

SOB CONSULTA *

TUBO REDONDO

|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | | POLEGADA | | |
|---|----------------|---------------------------|-----------|------|------|----------|----------|-------|
| | | | A | B | C | A | B | C |
| AT-0077 | 1,712 | 10,272 | 63,5 | 57,2 | 3,18 | 2.1/2" | 2.1/4" | 1/8" |
| AT-0145 | 0,246 | 1,475 | 14,3 | 13,3 | 1,00 | 9/16" | 17/32" | 1/32" |
| AT-0146 | 0,146 | 0,876 | 19,0 | 17,2 | 0,90 | 3/4" | 11/16" | 1/32" |
| AT-0390 | 0,133 | 0,798 | 15,9 | 13,9 | 1,00 | 5/8" | 9/16" | 1/32" |
| AT-0441 | 0,161 | 0,966 | 19,1 | 17,1 | 1,00 | 3/4" | 7/10" | 1/32" |
| AT-0666 | 0,136 | 0,816 | 22,5 | 21,1 | 0,70 | 7/8" | 13/16" | 1/32" |
| AT-0738 | 0,185 | 1,110 | 25,2 | 23,5 | 0,90 | 1" | 1.15/16" | 1/32" |
| AT-1012 | 0,072 | 0,432 | 14,1 | 12,9 | 0,60 | 9/16" | 1/2" | 1/32" |


TUBO ESTRIADO

|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | | POLEGADA | | |
|---|----------------|---------------------------|-----------|------|------|----------|---------|-------|
| | | | A | B | C | A | B | C |
| AT-0162 | 0,341 | 2,046 | 31,0 | 28,0 | 3,00 | 1.7/32" | 1.1/32" | 1/8" |
| AT-0665 | 0,119 | 0,714 | 22,4 | 20,7 | 0,85 | 7/8" | 13/16" | 1/32" |


BARRA CHATA

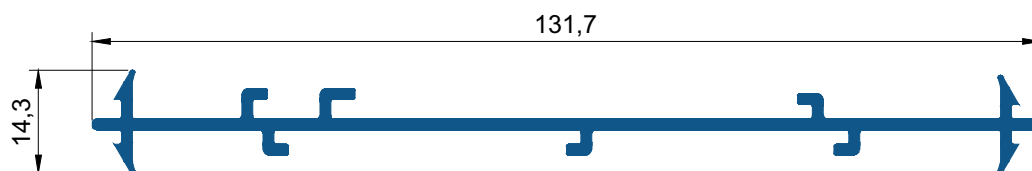
| C | A | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | | POLEGADA | |
|---|---------|----------------|---------------------------|-----------|-------|----------|-------|
| | | | | A | C | A | C |
| | AT-0156 | 0,573 | 3,438 | 63,5 | 3,20 | 2.1/2" | 1/8" |
| | AT-0158 | 0,115 | 0,690 | 12,7 | 3,20 | 1/2" | 1/8" |
| | AT-0190 | 1,365 | 8,190 | 76,2 | 6,30 | 3" | 1/4" |
| | AT-0214 | 0,282 | 1,692 | 31,0 | 3,20 | 1.7/32" | 1/8" |
| | AT-0215 | 0,740 | 4,440 | 65,1 | 4,00 | 2.9/16" | 5/32" |
| | AT-0285 | 5,492 | 32,952 | 101,6 | 19,00 | 4" | 3/4" |
| | AT-0286 | 0,462 | 2,772 | 50,8 | 3,20 | 2" | 1/8" |
| | AT-0603 | 0,401 | 2,406 | 50,8 | 2,80 | 2" | 1/8" |
| | AT-1101 | 0,230 | 1,380 | 25,4 | 3,18 | 1" | 1/8" |
| | AT-1115 | 0,398 | 2,388 | 50,8 | 2,80 | 2" | 1/9" |
| | AT-1177 | 1,374 | 8,244 | 50,8 | 9,52 | 2" | 3/8" |
| | AT-1201 | 0,258 | 1,548 | 19,1 | 4,76 | 3/4" | 3/16" |

VERGALHÃO QUADRADO

|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | POLEGADA |
|---|----------------|---------------------------|-----------|----------|
| | | | A | A |
| AT-0052 | 1,894 | 11,364 | 25,8 | 1" |
| AT-0216 | 0,458 | 2,748 | 12,7 | 1/2" |

VERGALHÃO REDONDO

|  | PESO (kg/m) | PESO BARRA 6 metros | MILÍMETRO | POLEGADA |
|---|----------------|---------------------------|-----------|----------|
| | | | A | A |
| AT-0186 | 0,085 | 0,510 | 9,5 | 3/8" |
| AT-0189 | 0,227 | 1,362 | 25,4 | 1" |
| AT-0217 | 0,114 | 0,684 | 12,7 | 1/2" |



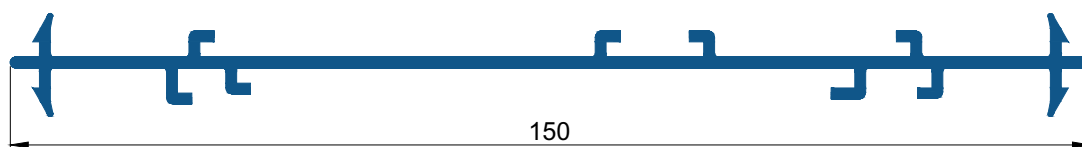
CÓDIGO

CM-093

PESO (kg/m)

0.780

SOB CONSULTA

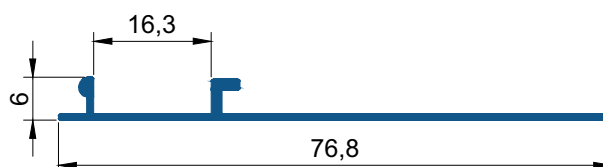


CÓDIGO

CM-094

PESO (kg/m)

0.951



CÓDIGO

CM-034

PESO (kg/m)

0.236

Technical drawing of profile CL-006. The drawing shows an L-shaped profile with a vertical leg and a horizontal leg, both 49,7 units long. The horizontal leg has three rectangular protrusions along its top edge.

CÓDIGO
CL-006

PESO (kg/m)
1.112

Technical drawing of profile CL-011. The drawing shows a horizontal profile with a height of 3,3 units and a length of 49,7 units. It features three rectangular protrusions along its top edge.

CÓDIGO
CL-011

PESO (kg/m)
0.319

Technical drawing of profile CL-044. The drawing shows an L-shaped profile with a vertical leg and a horizontal leg, both 64 units long. The horizontal leg has three rectangular protrusions along its top edge. A dimension of 7 is shown for the thickness of the horizontal leg.

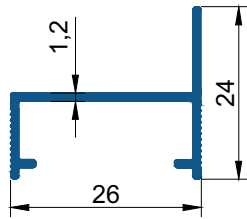
CÓDIGO
CL-044

PESO (kg/m)
1.093

Technical drawing of profile CL-010. The drawing shows a horizontal profile with a height of 3,3 units and a length of 60 units. It features three rectangular protrusions along its top edge.

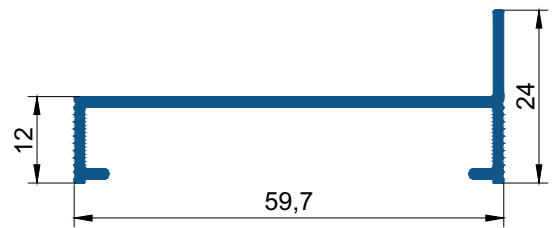
CÓDIGO
CL-010

PESO (kg/m)
0.385



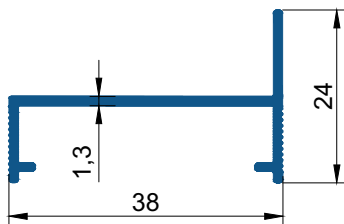
CÓDIGO
CM-200

PESO (kg/m)
0.198



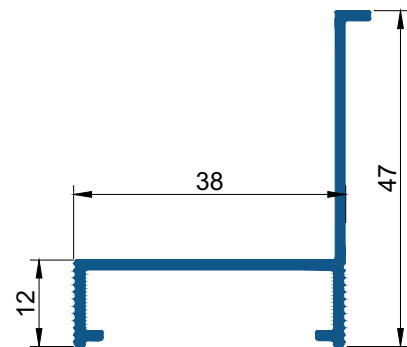
CÓDIGO
CM-174

PESO (kg/m)
0.411



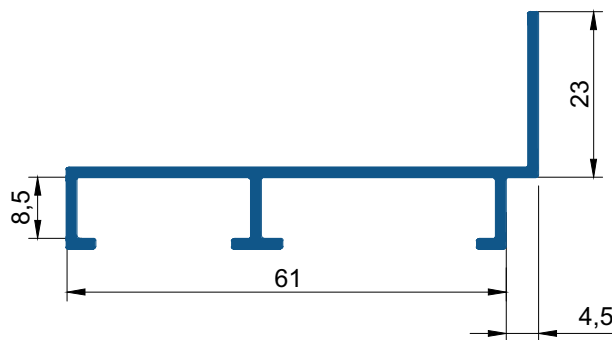
CÓDIGO
CM-060

PESO (kg/m)
0.276



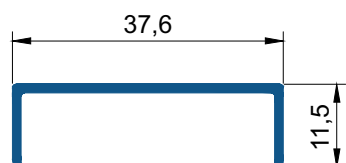
CÓDIGO
CM-098

PESO (kg/m)
0.392

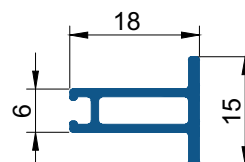


CÓDIGO
CM-129

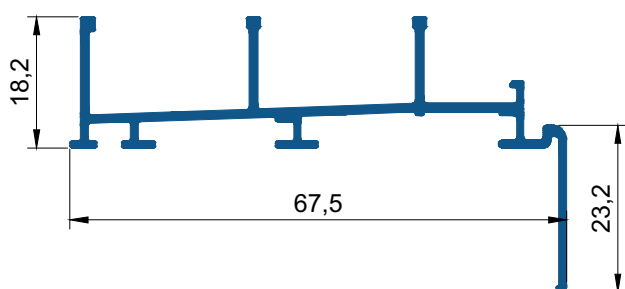
PESO (kg/m)
0.489



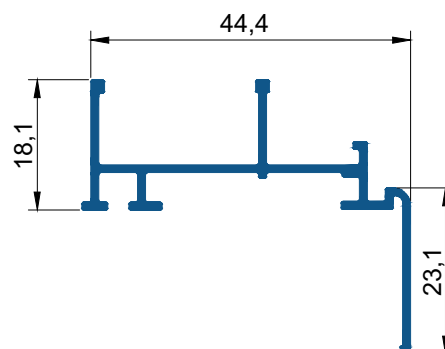
CÓDIGO **W16-483** PESO (kg/m) **0.197**



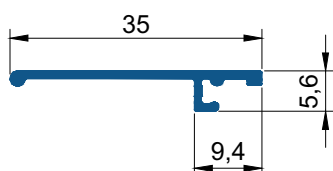
CÓDIGO **W16-490** PESO (kg/m) **0.180**



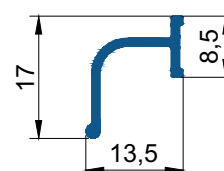
CÓDIGO **W16-533** PESO (kg/m) **0.560**



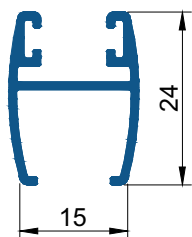
CÓDIGO **W16-485** PESO (kg/m) **0.388**



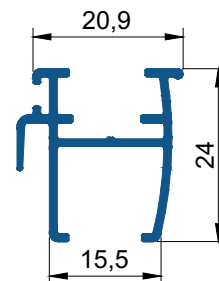
CÓDIGO **W16-491** PESO (kg/m) **0.144**



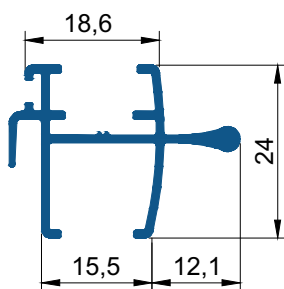
CÓDIGO **W16-535** PESO (kg/m) **0.111**



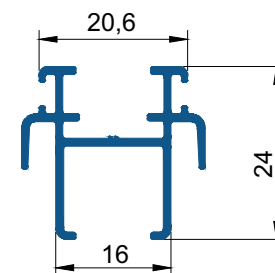
CÓDIGO PESO (kg/m)
W16-480 0.266



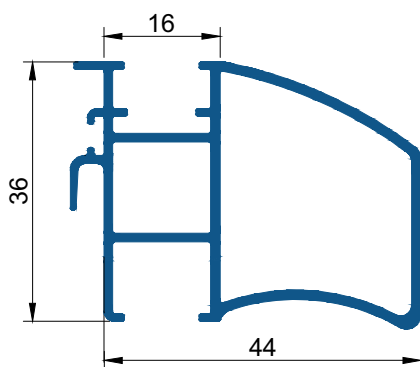
CÓDIGO PESO (kg/m)
W16-481 0.285



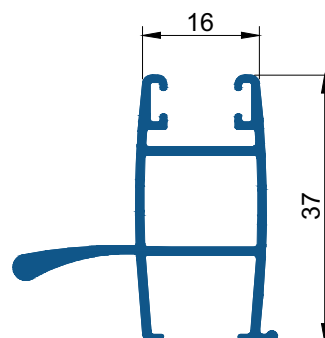
CÓDIGO PESO (kg/m)
W16-482 0.334



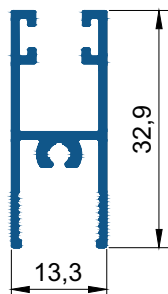
CÓDIGO PESO (kg/m)
W16-534 0.302



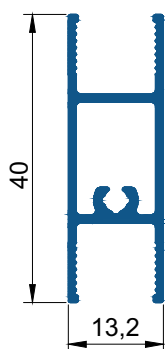
CÓDIGO PESO (kg/m)
W16-562 0.738



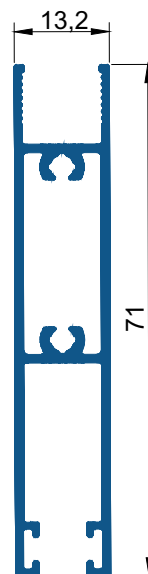
CÓDIGO PESO (kg/m)
W16-563 0.517



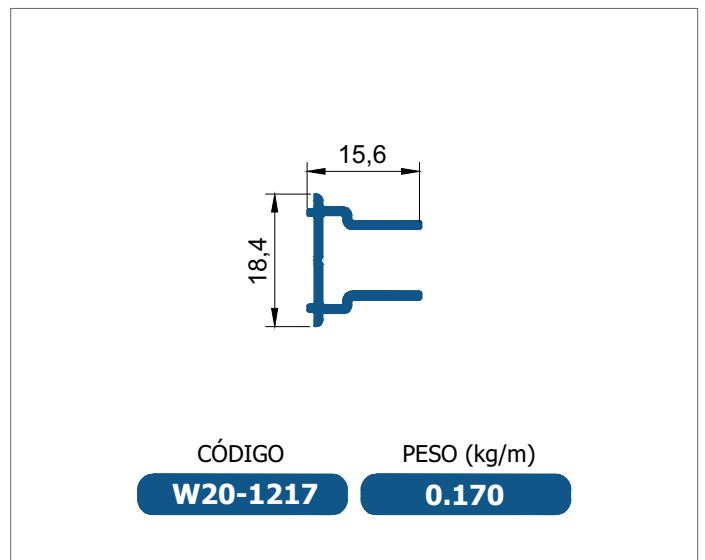
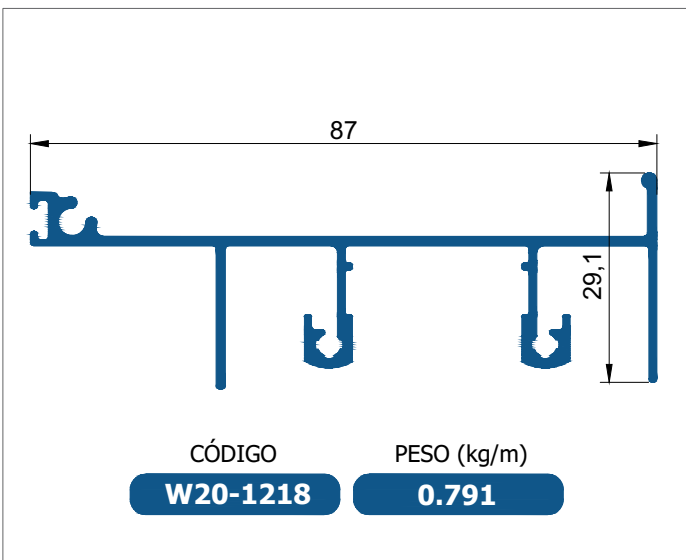
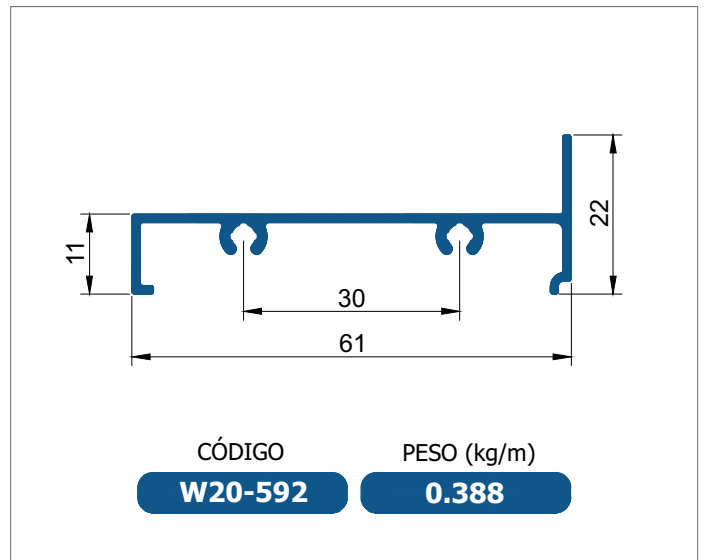
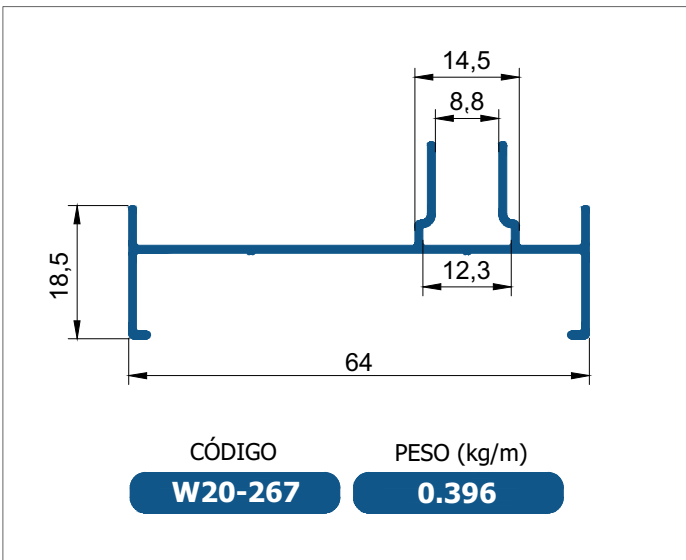
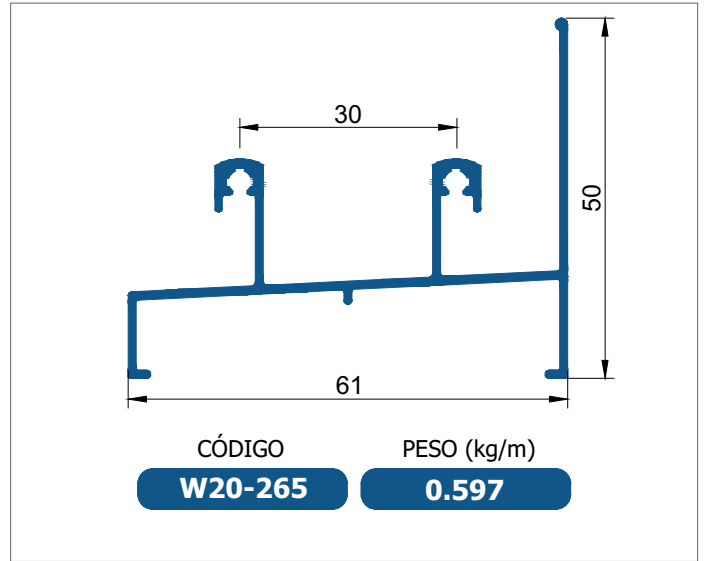
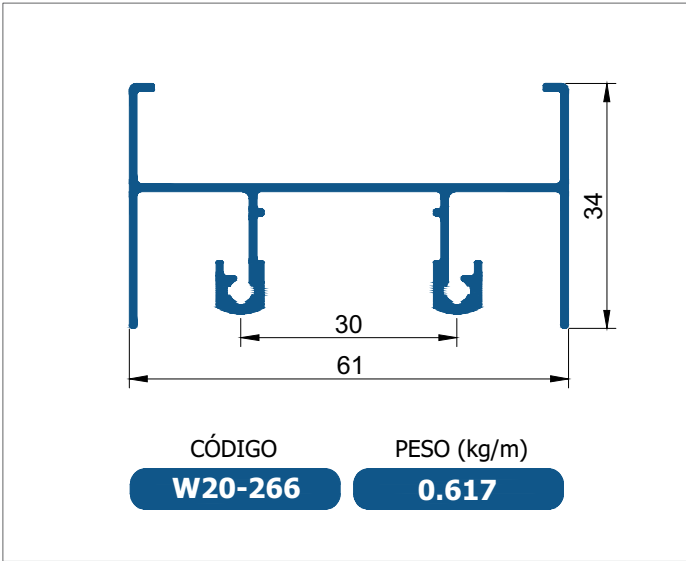
CÓDIGO **W16-487** PESO (kg/m) **0.319**

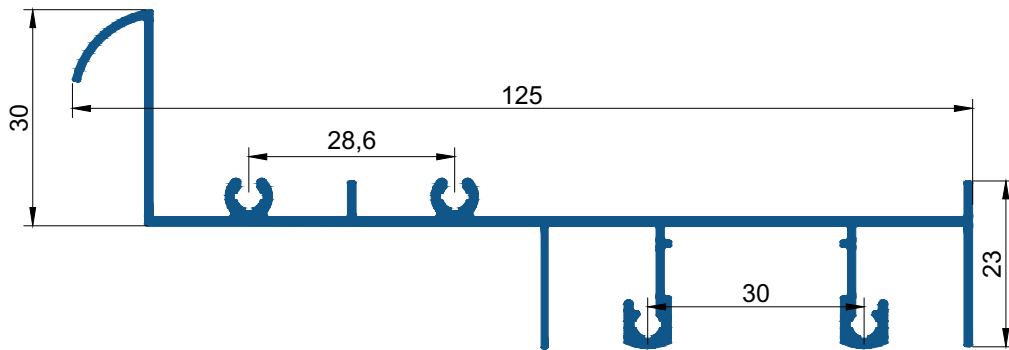


CÓDIGO **W16-561** PESO (kg/m) **0.357**

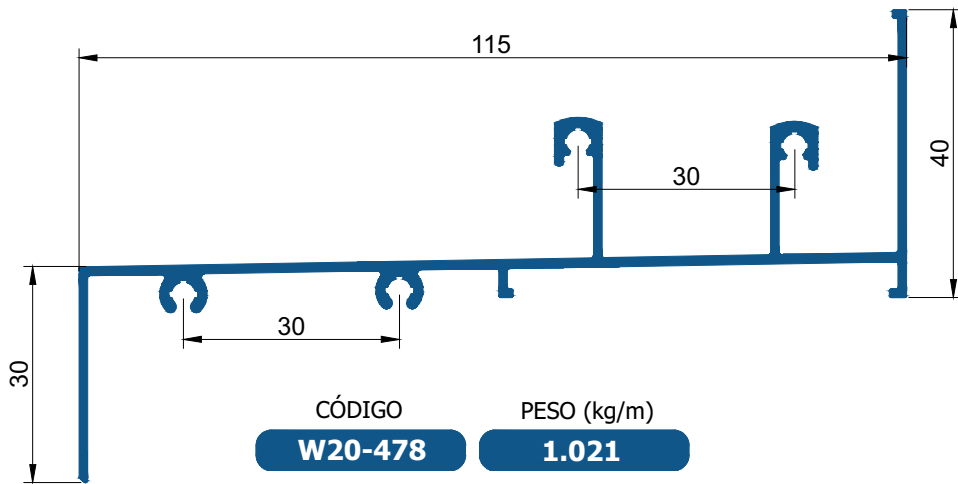


CÓDIGO **W16-560** PESO (kg/m) **0.652**

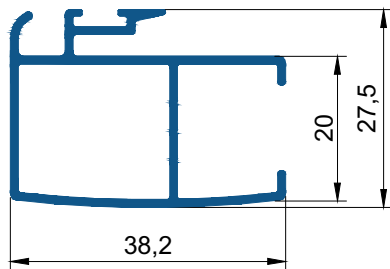




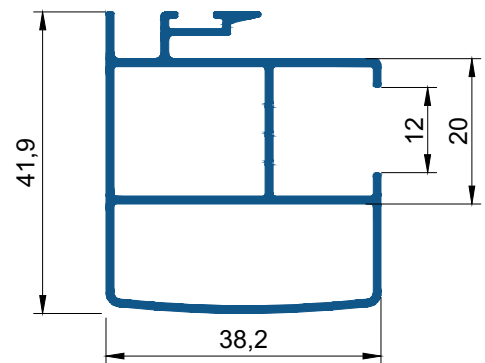
CÓDIGO **W20-477** PESO (kg/m) **1.026**



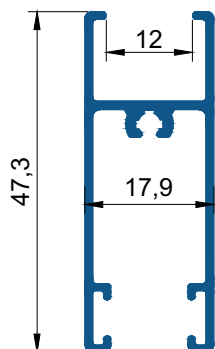
CÓDIGO **W20-478** PESO (kg/m) **1.021**



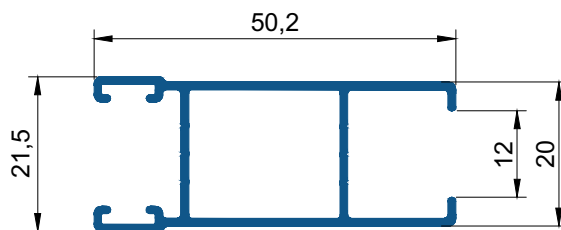
CÓDIGO **W20-269** PESO (kg/m) **0.443**



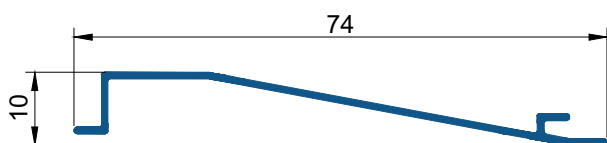
CÓDIGO **W20-294** PESO (kg/m) **0.626**



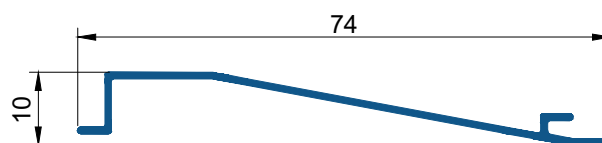
CÓDIGO PESO (kg/m)
W20-268 0.420



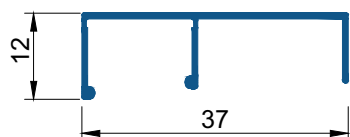
CÓDIGO PESO (kg/m)
W20-270 0.453



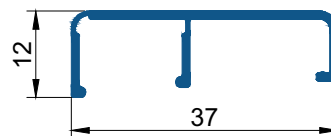
CÓDIGO PESO (kg/m)
VZ-024 0.230



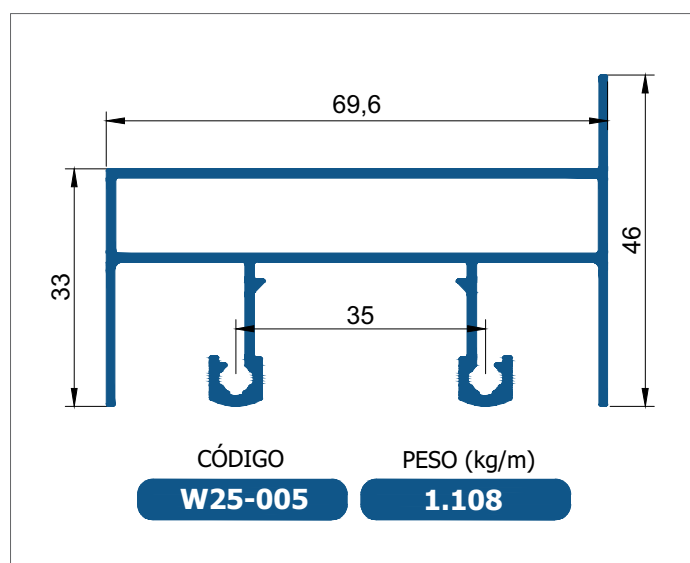
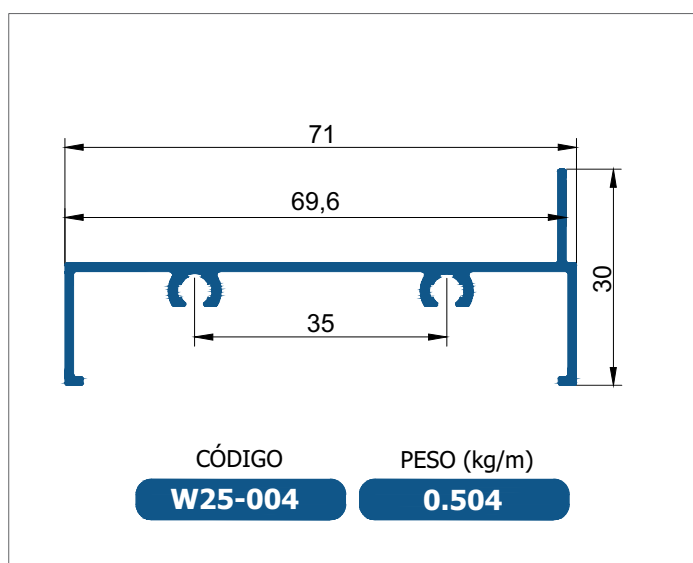
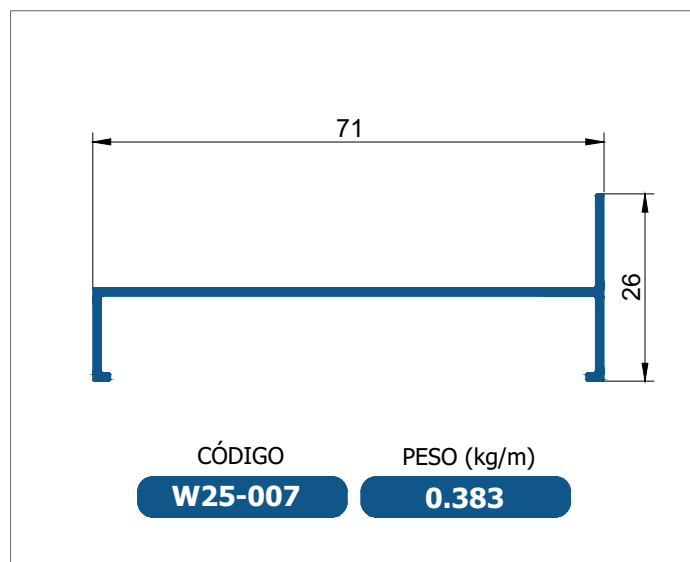
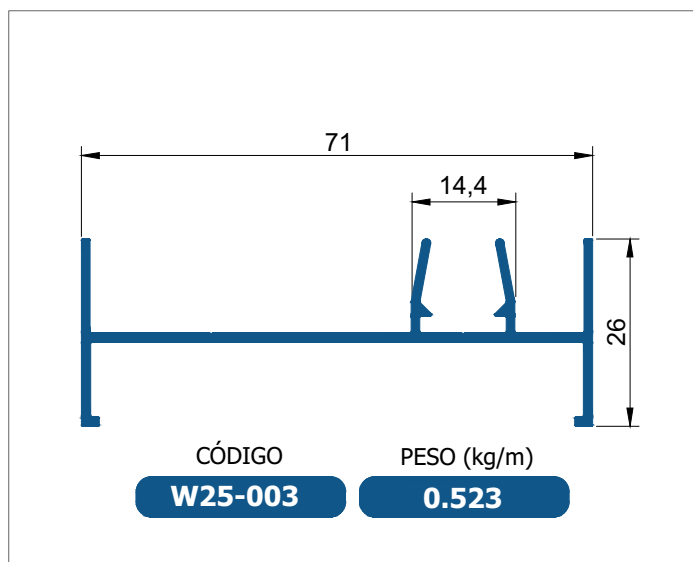
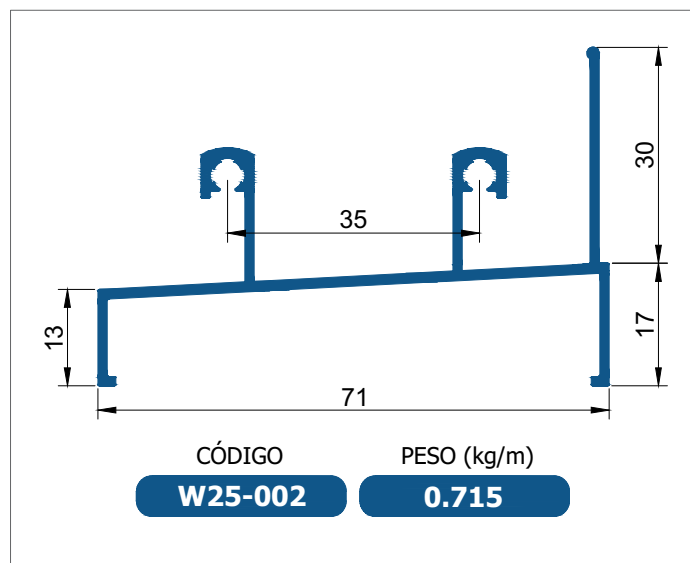
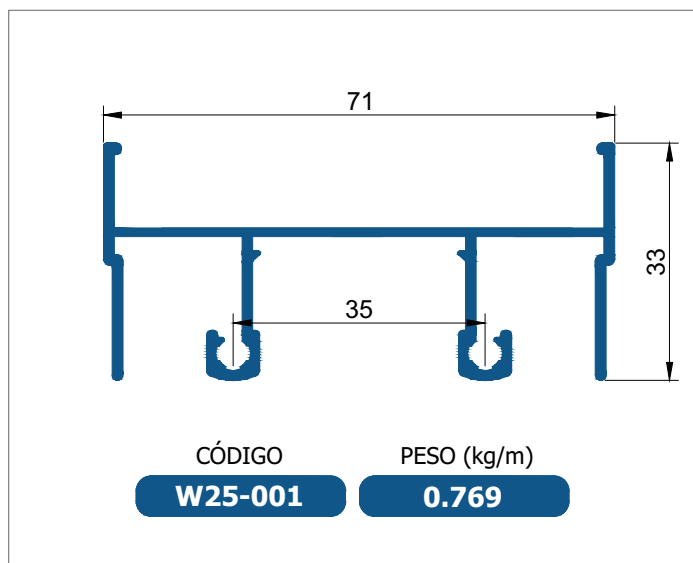
CÓDIGO PESO (kg/m)
US-280 0.230

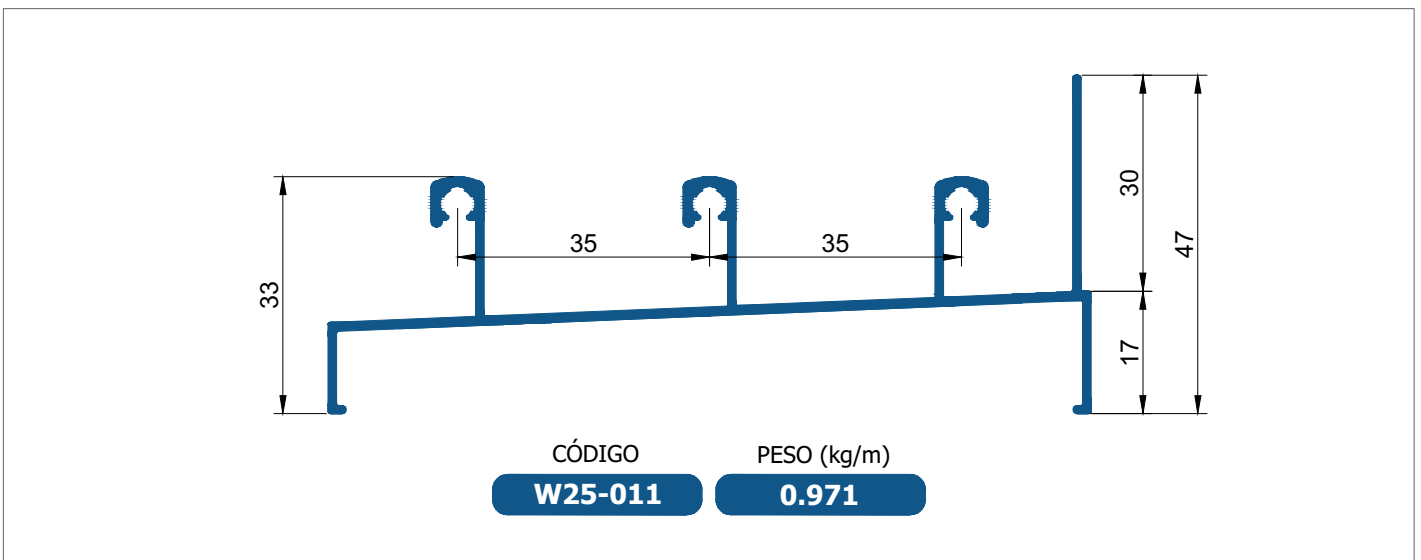
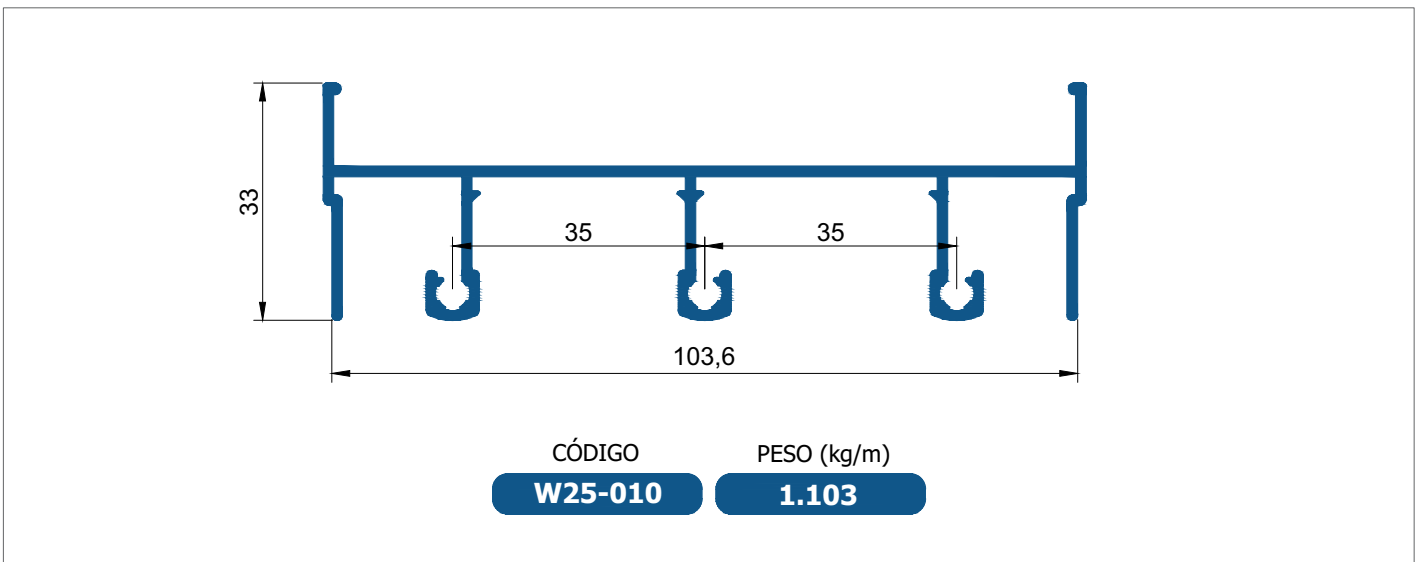
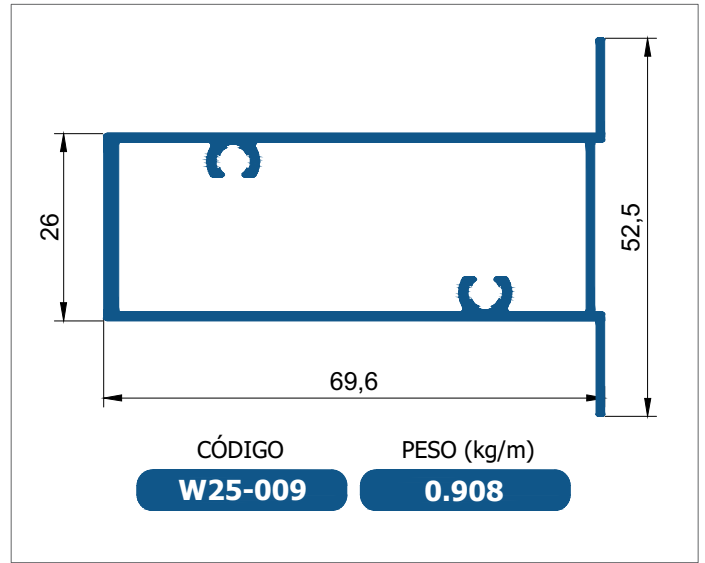
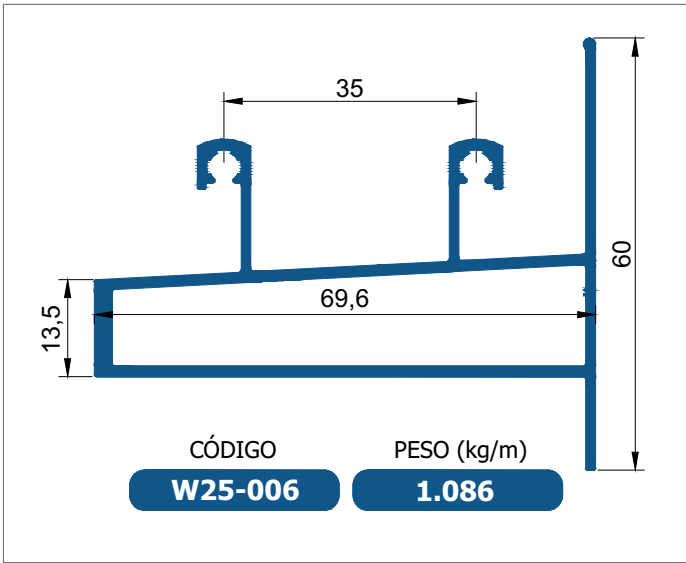


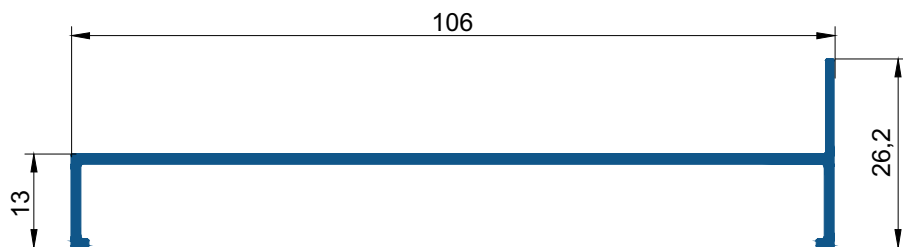
CÓDIGO PESO (kg/m)
MP-347 0.202



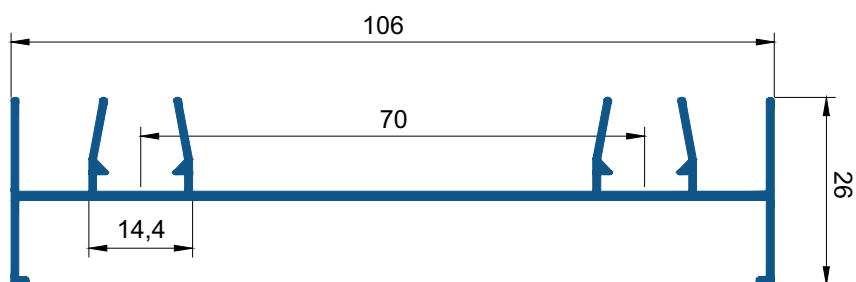
CÓDIGO PESO (kg/m)
MH-0017 0.197



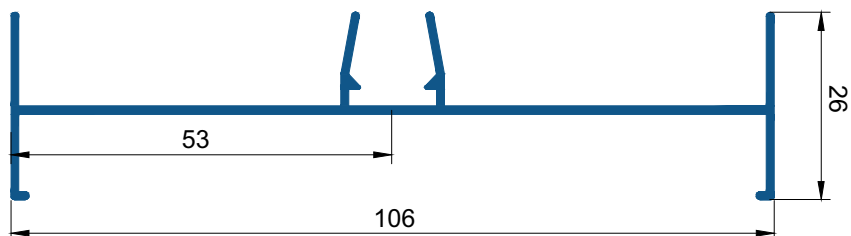




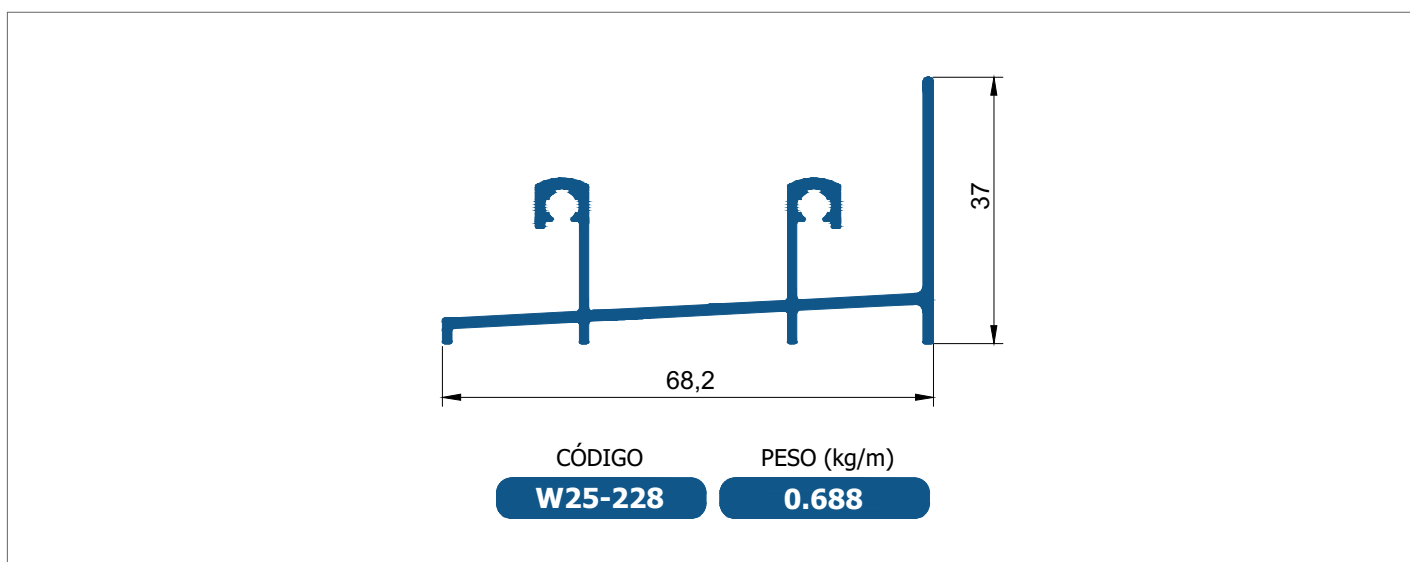
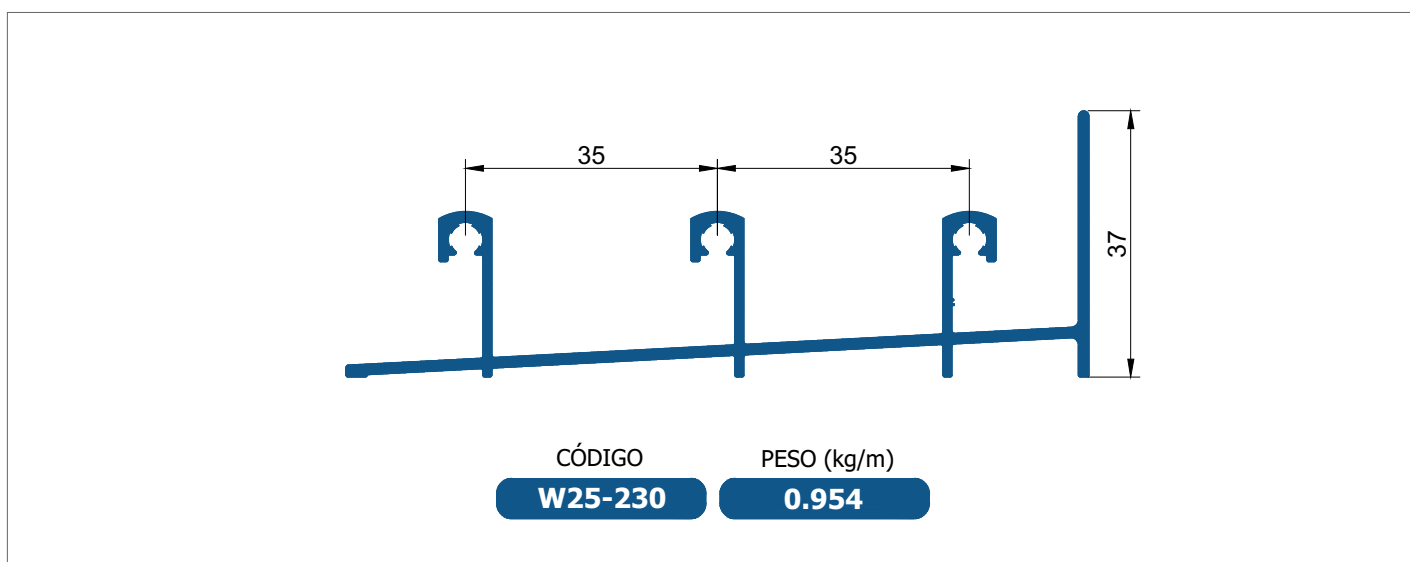
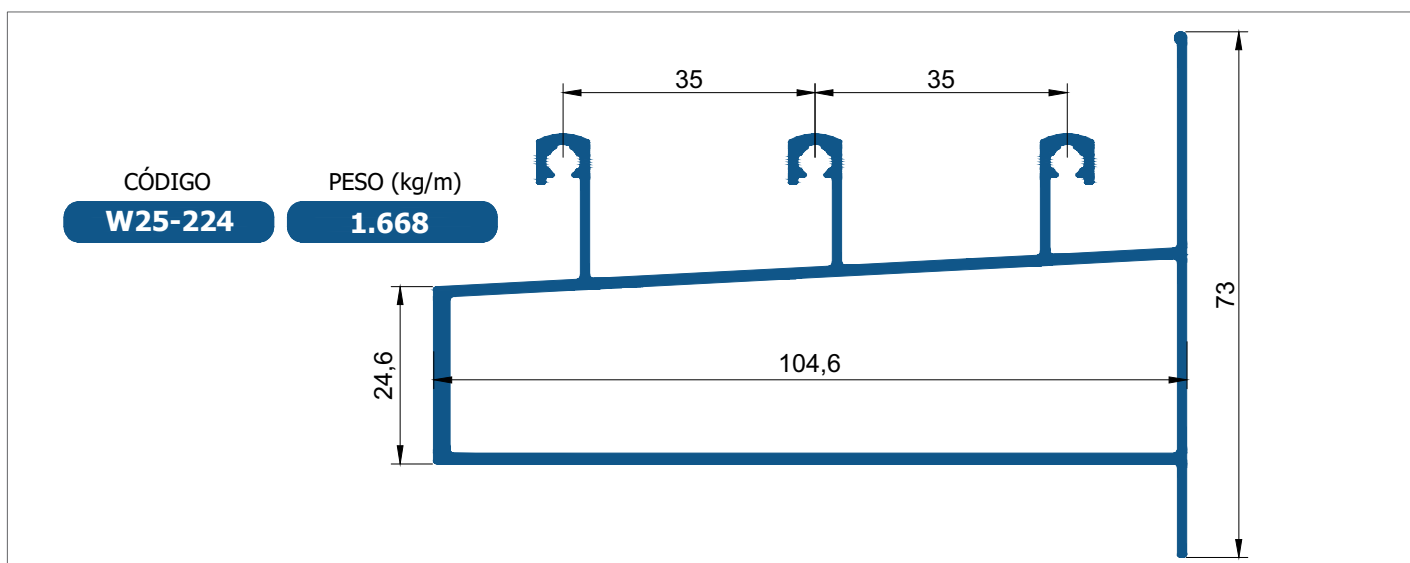
CÓDIGO PESO (kg/m)
W25-012 0.554

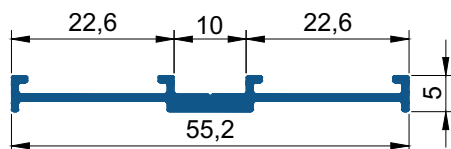


CÓDIGO PESO (kg/m)
W25-013 0.772



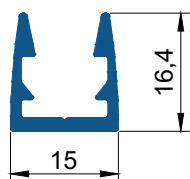
CÓDIGO PESO (kg/m)
W25-014 0.677





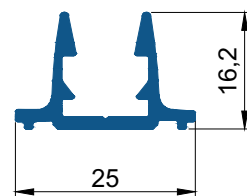
CÓDIGO
W25-540

PESO (kg/m)
0.271



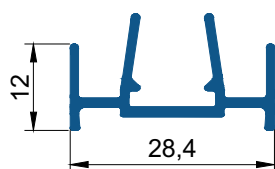
CÓDIGO
W25-494

PESO (kg/m)
0.227



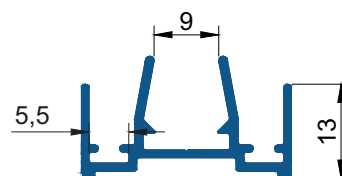
CÓDIGO
W25-537

PESO (kg/m)
0.275



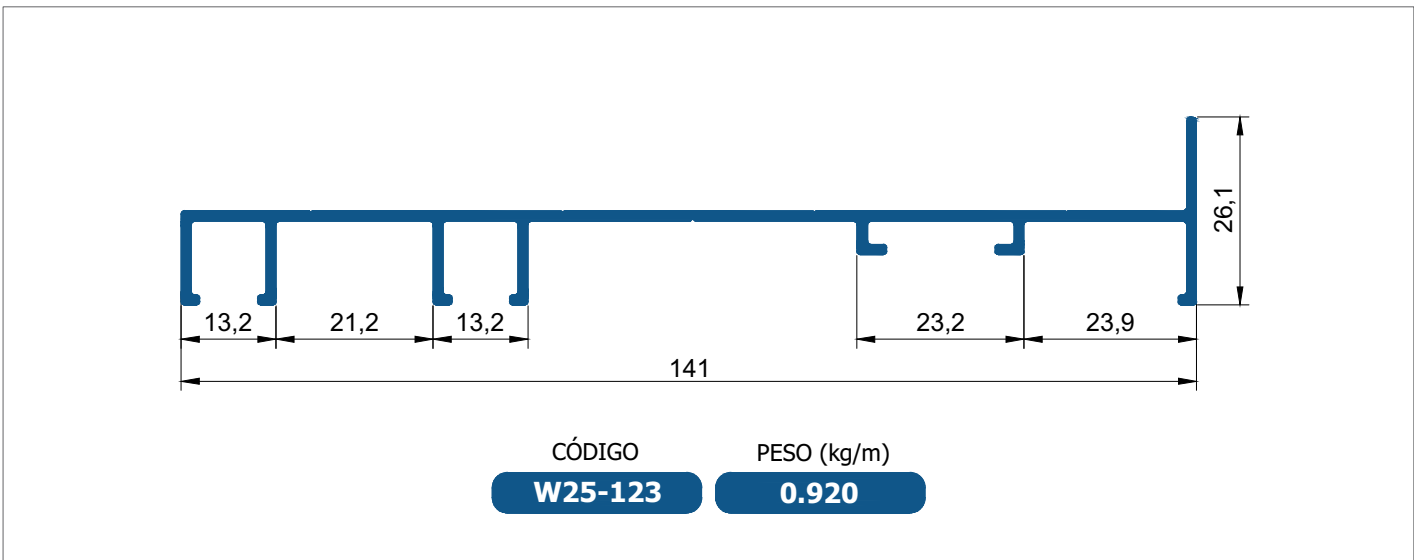
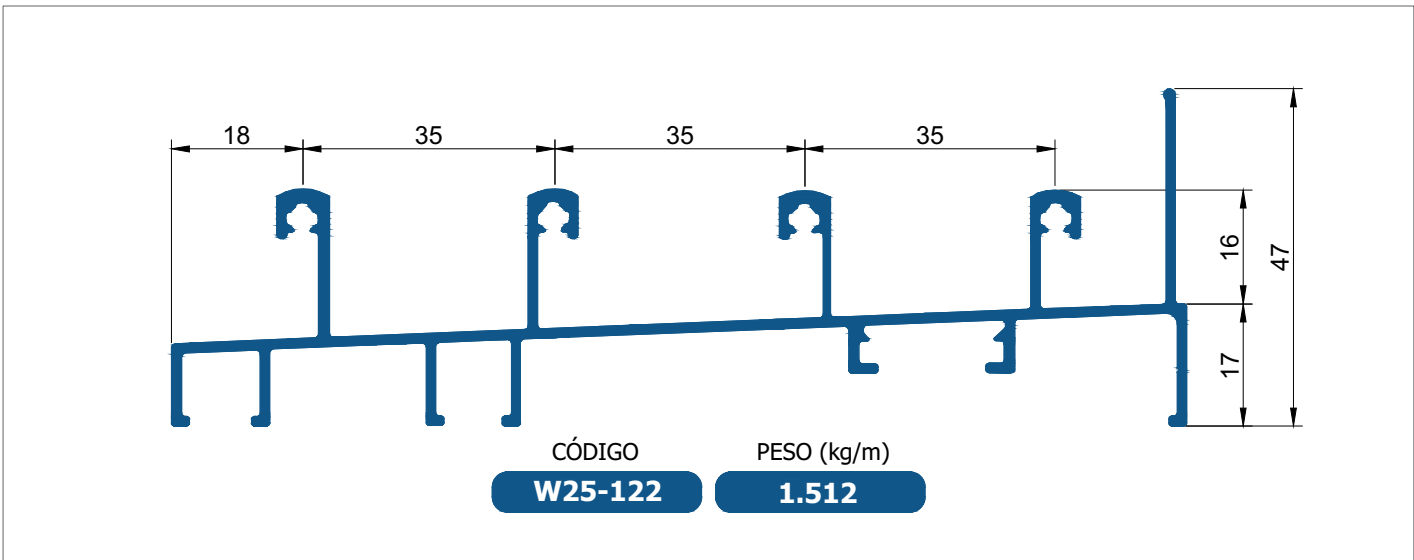
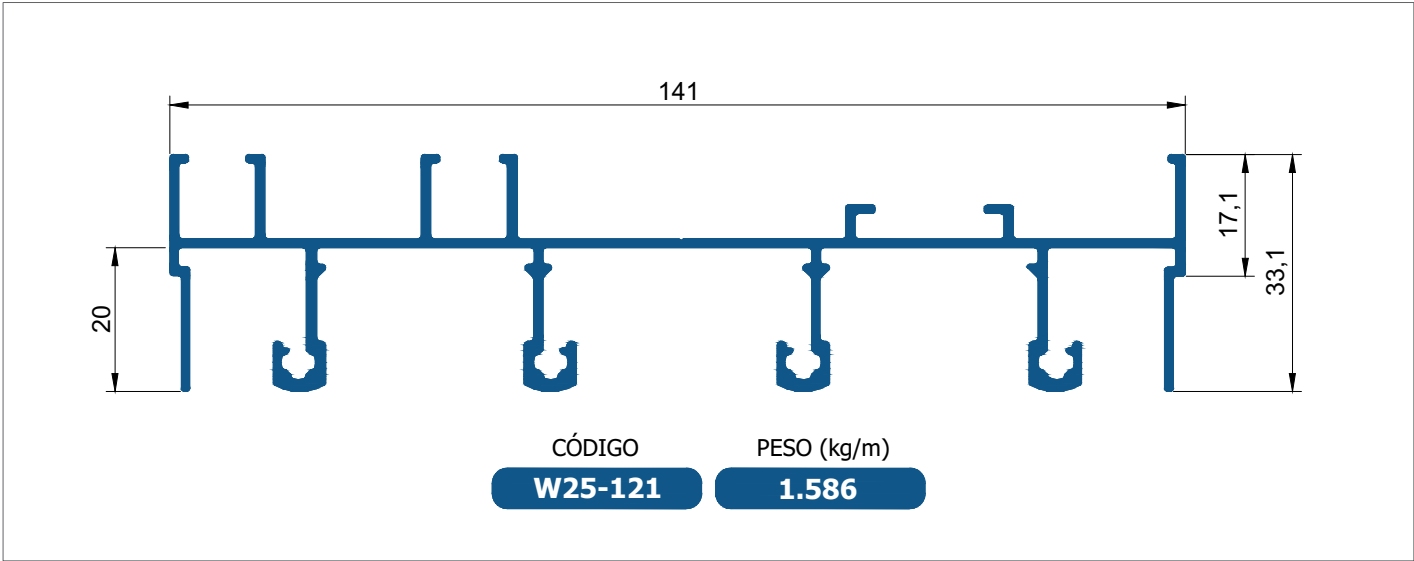
CÓDIGO
W25-291

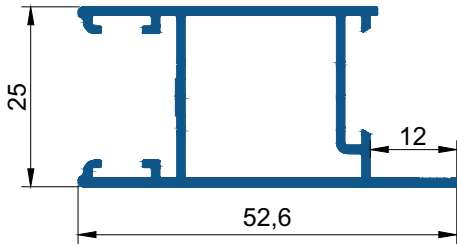
PESO (kg/m)
0.263



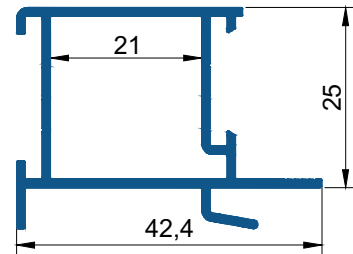
CÓDIGO
W25-541

PESO (kg/m)
0.297

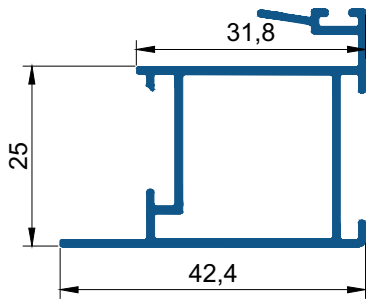




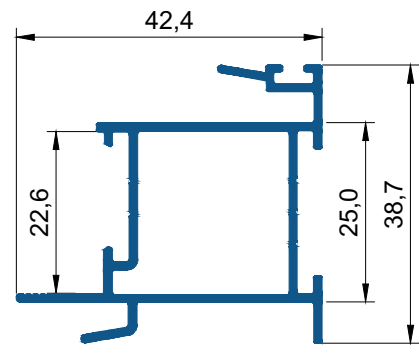
CÓDIGO **W25-039** PESO (kg/m) **0.520**



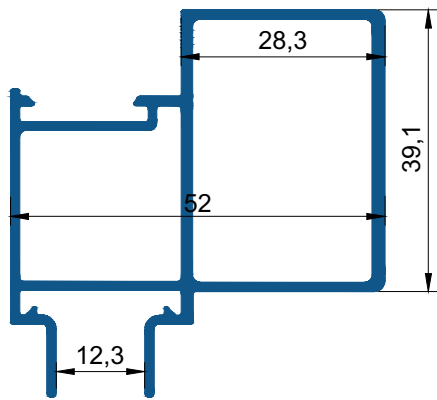
CÓDIGO **W25-040** PESO (kg/m) **0.480**



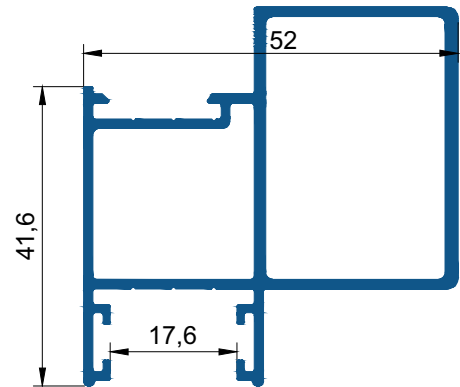
CÓDIGO **W25-041** PESO (kg/m) **0.507**



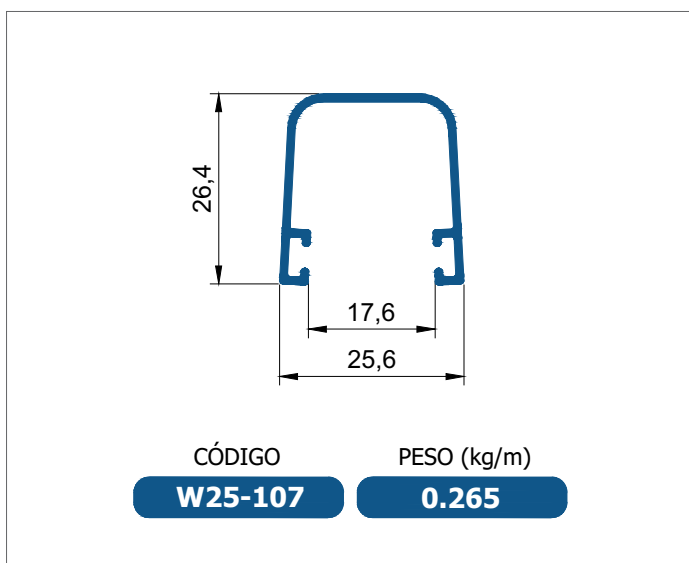
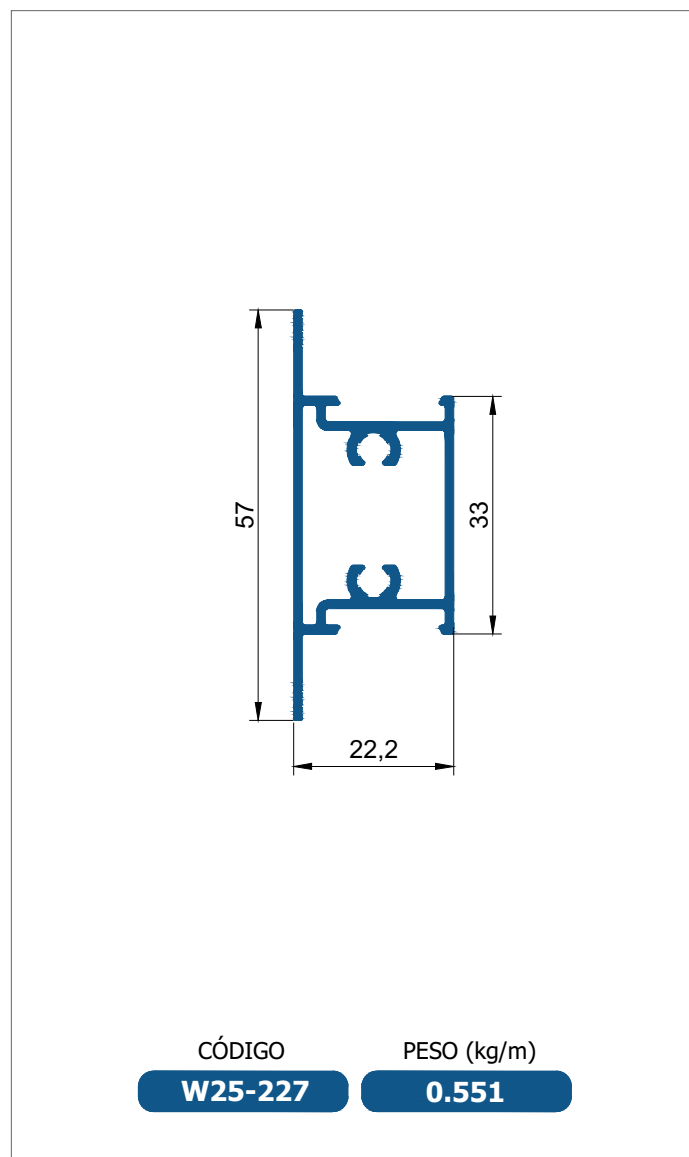
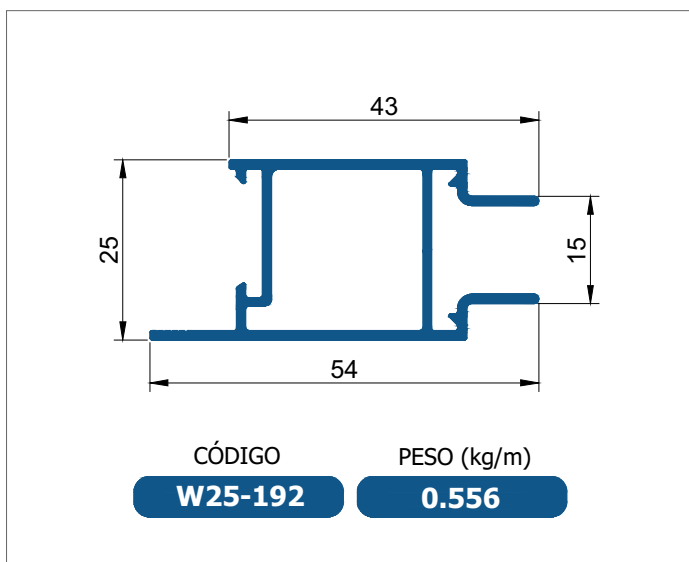
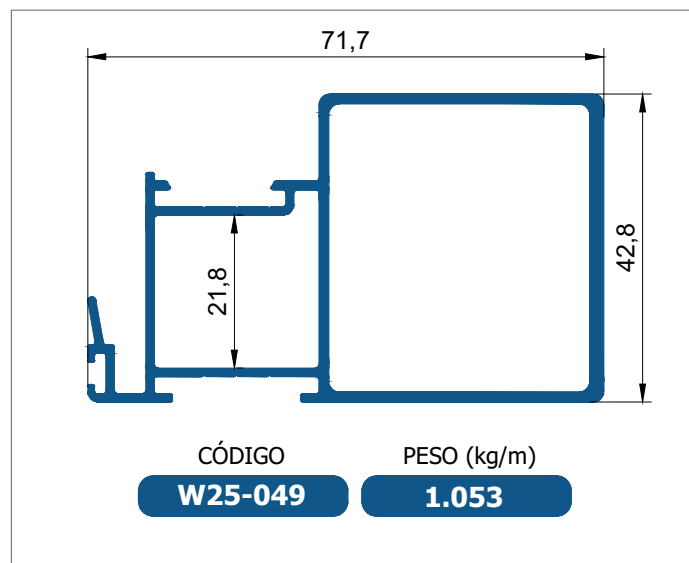
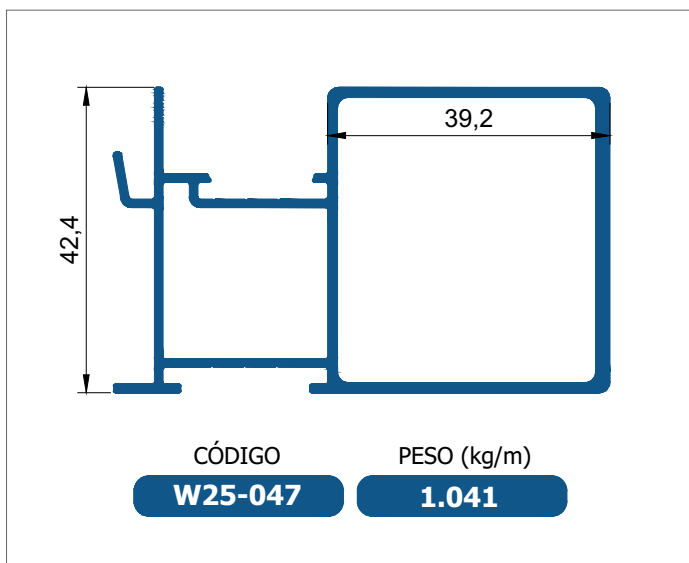
CÓDIGO **W25-042** PESO (kg/m) **0.564**

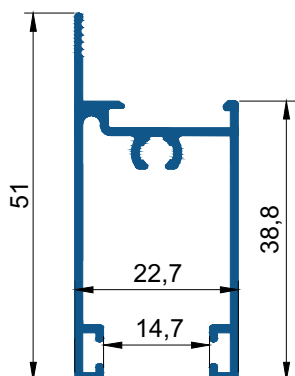


CÓDIGO **W25-043** PESO (kg/m) **0.962**



CÓDIGO **W25-044** PESO (kg/m) **0.970**

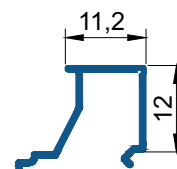




CÓDIGO PESO (kg/m)

W25-053

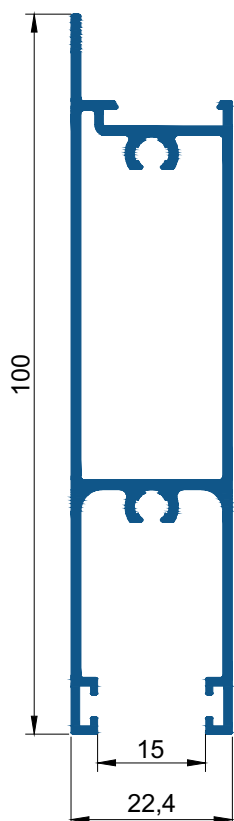
0.507



CÓDIGO PESO (kg/m)

W25-102

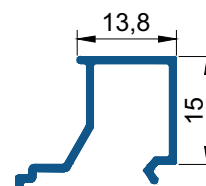
0.111



CÓDIGO PESO (kg/m)

W25-225

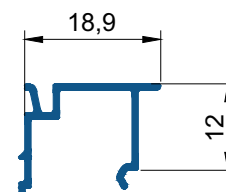
0.989



CÓDIGO PESO (kg/m)

W25-103

0.147

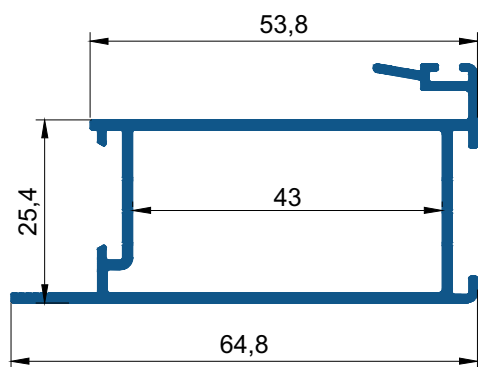


CÓDIGO PESO (kg/m)

W25-203

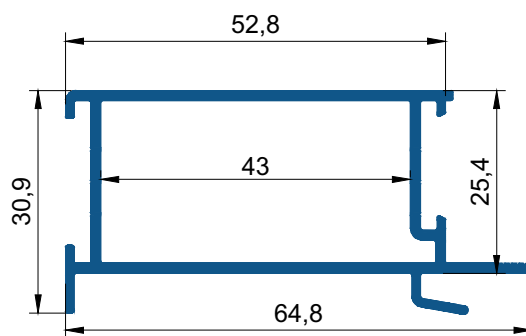
0.133

SOB CONSULTA



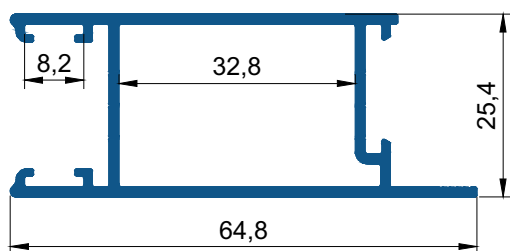
CÓDIGO **W25-242** PESO (kg/m) **0.740**

SOB CONSULTA

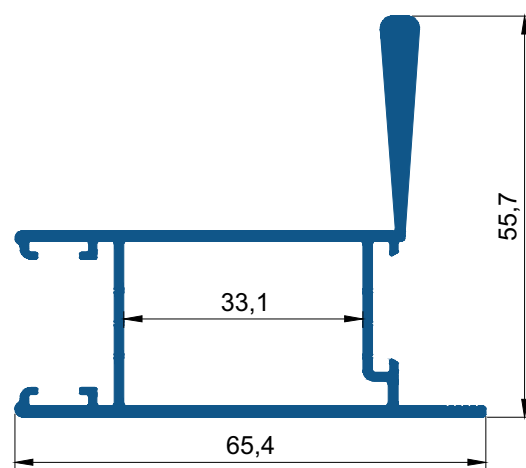


CÓDIGO **W25-243** PESO (kg/m) **0.712**

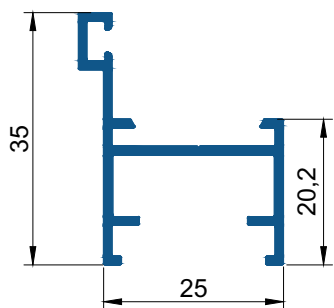
SOB CONSULTA



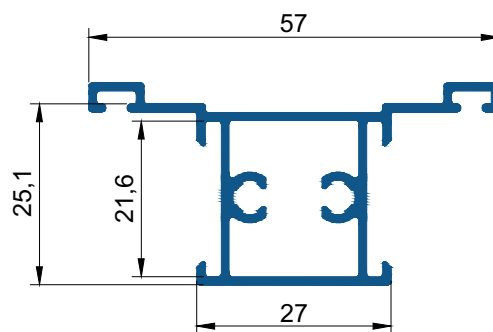
CÓDIGO **W25-245** PESO (kg/m) **0.688**



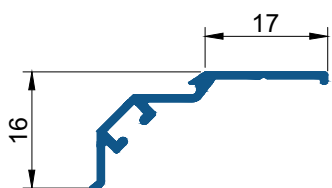
CÓDIGO **W25-280** PESO (kg/m) **1.006**



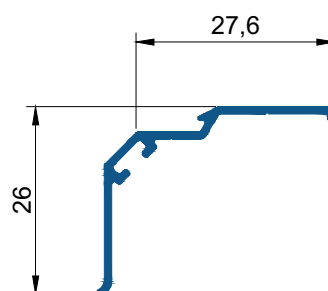
CÓDIGO PESO (kg/m)
W25-079 0.341



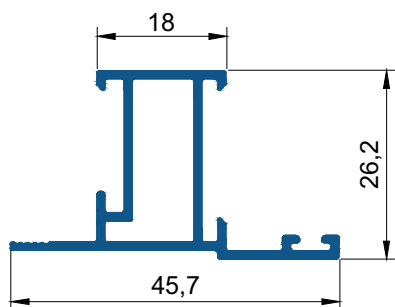
CÓDIGO PESO (kg/m)
W25-086 0.596



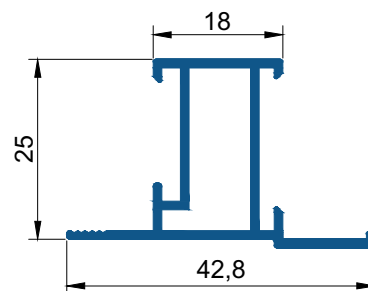
CÓDIGO PESO (kg/m)
W25-083 0.153



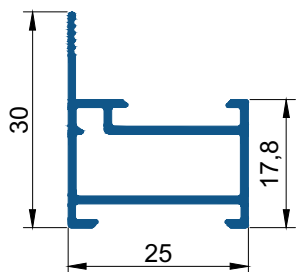
CÓDIGO PESO (kg/m)
W25-276 0.169



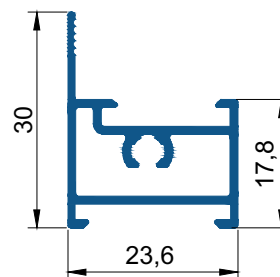
CÓDIGO PESO (kg/m)
W25-200 0.443



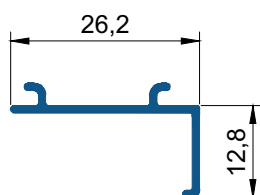
CÓDIGO PESO (kg/m)
W25-081 0.412



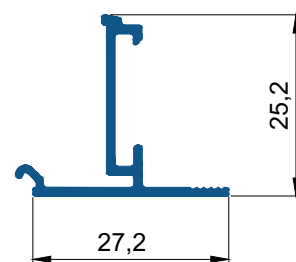
CÓDIGO **W25-080** PESO (kg/m) **0.360**



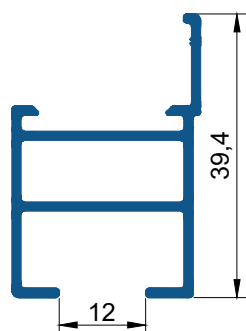
CÓDIGO **W25-082** PESO (kg/m) **0.382**



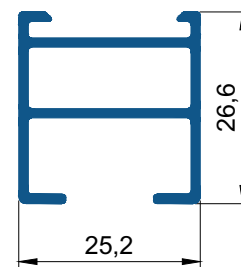
CÓDIGO **W25-084** PESO (kg/m) **0.125**



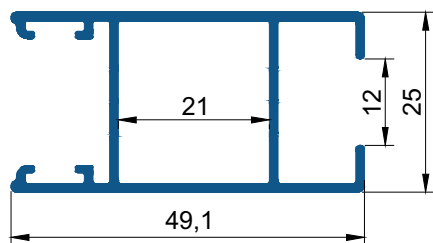
CÓDIGO **W25-292** PESO (kg/m) **0.221**



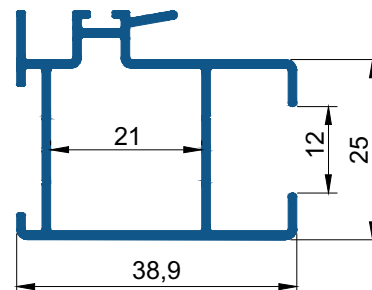
CÓDIGO **W25-090** PESO (kg/m) **0.453**



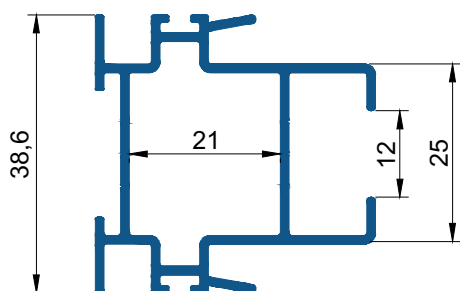
CÓDIGO **W25-091** PESO (kg/m) **0.401**



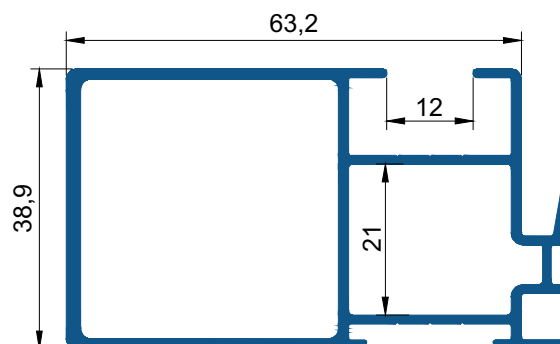
CÓDIGO PESO (kg/m)
W25-055 0.545



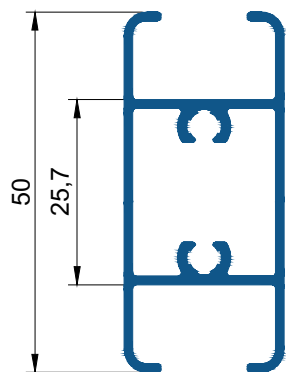
CÓDIGO PESO (kg/m)
W25-056 0.539



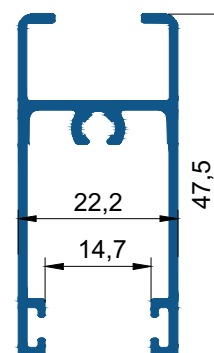
CÓDIGO PESO (kg/m)
W25-057 0.631



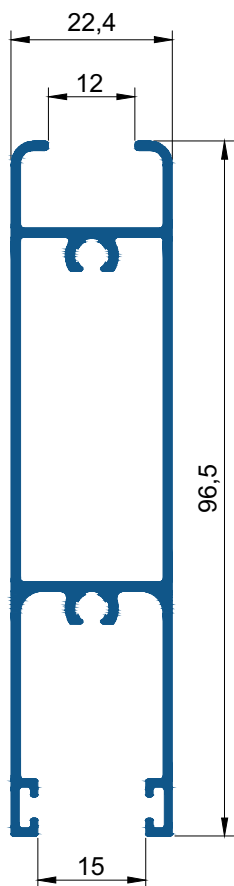
CÓDIGO PESO (kg/m)
W25-061 1.063



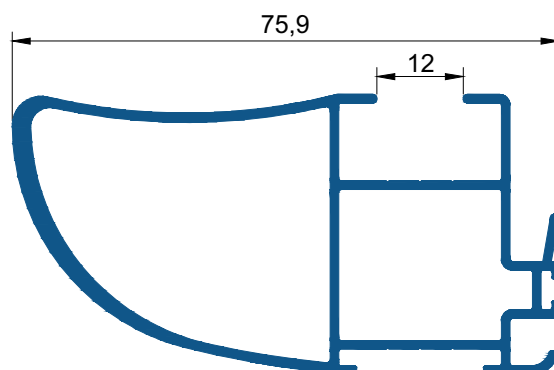
CÓDIGO PESO (kg/m)
W25-188 0.586



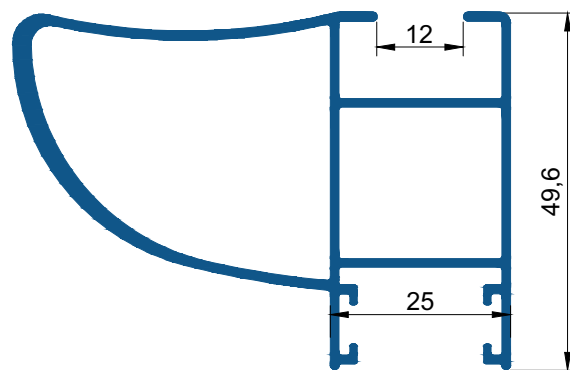
CÓDIGO PESO (kg/m)
W25-186 0.510



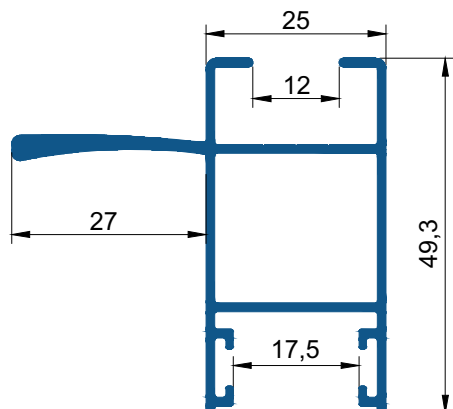
CÓDIGO **W25-226** PESO (kg/m) **1.014**



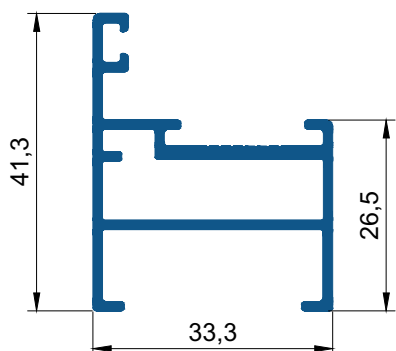
CÓDIGO **W25-499** PESO (kg/m) **1.085**



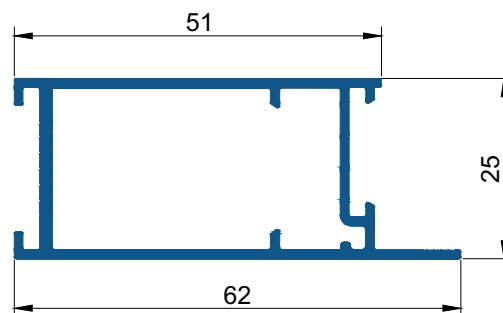
CÓDIGO **W25-532** PESO (kg/m) **1.090**



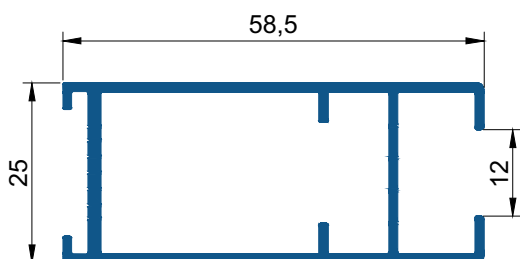
CÓDIGO **W25-270** PESO (kg/m) **0.711**



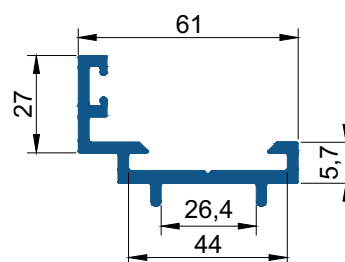
CÓDIGO PESO (kg/m)
W25-279 0.581



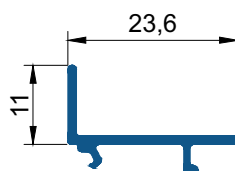
CÓDIGO PESO (kg/m)
W25-111 0.640



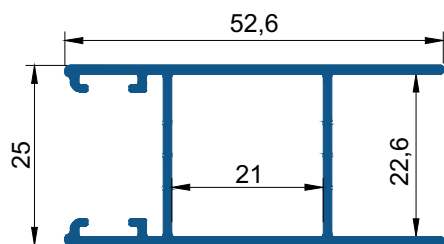
CÓDIGO PESO (kg/m)
W25-241 0.734



CÓDIGO PESO (kg/m)
25-548 0.293

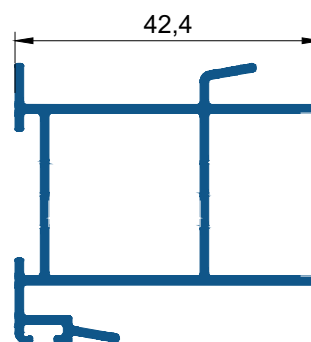


CÓDIGO PESO (kg/m)
W25-108 0.146



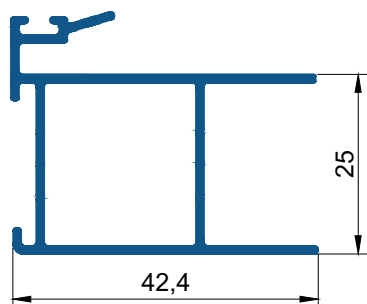
CÓDIGO
W25-068

PESO (kg/m)
0.534



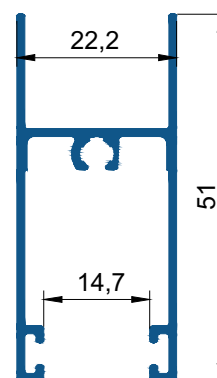
CÓDIGO
W25-069

PESO (kg/m)
0.576



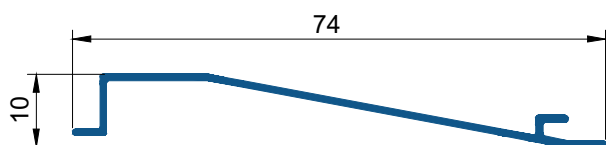
CÓDIGO
W25-070

PESO (kg/m)
0.522

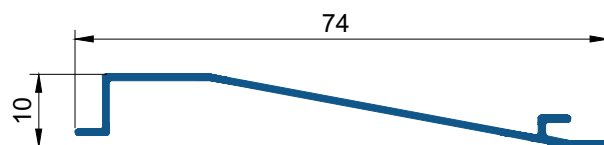


CÓDIGO
W25-187

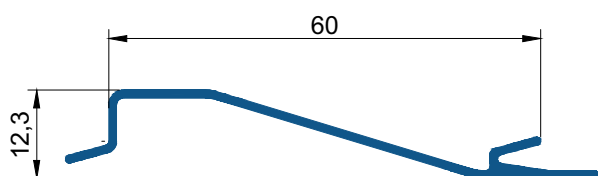
PESO (kg/m)
0.512



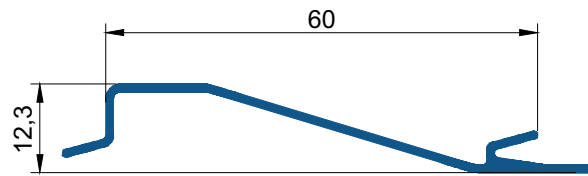
CÓDIGO PESO (kg/m)
VZ-024 0.230



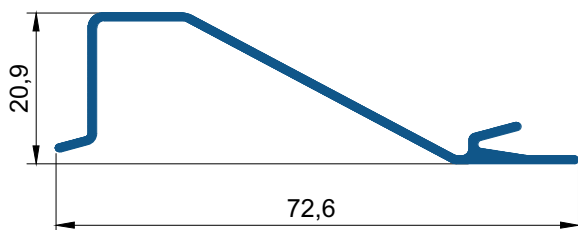
CÓDIGO PESO (kg/m)
US-280 0.230



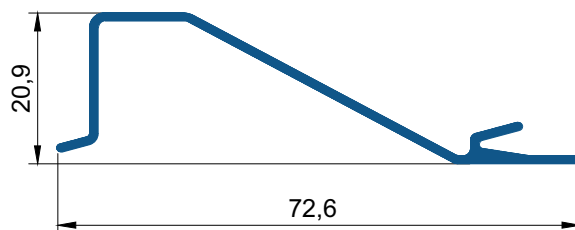
CÓDIGO PESO (kg/m)
VZ-051 0.282



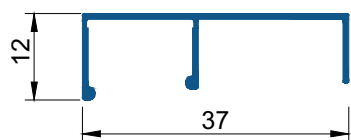
CÓDIGO PESO (kg/m)
US-294 0.282



CÓDIGO PESO (kg/m)
VZ-006 0.321

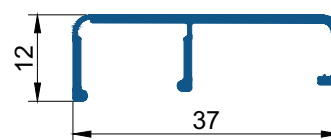


CÓDIGO PESO (kg/m)
US-285 0.321



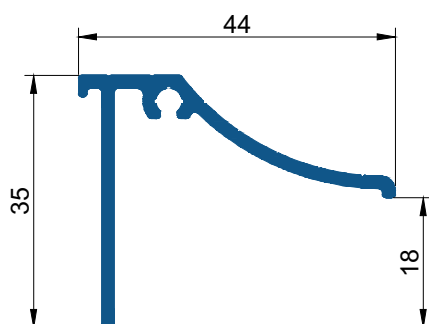
CÓDIGO
MP-347

PESO (kg/m)
0.202



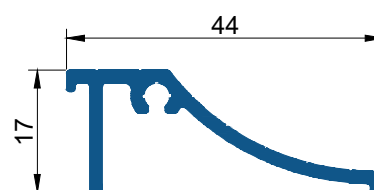
CÓDIGO
MH-0017

PESO (kg/m)
0.197



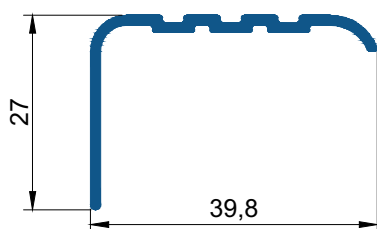
CÓDIGO
CM-169

PESO (kg/m)
0.435



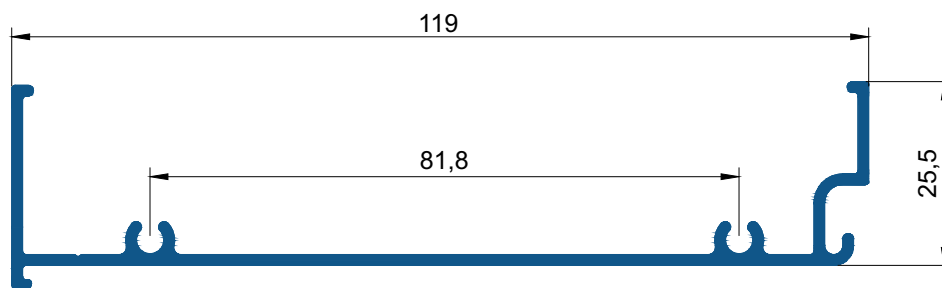
CÓDIGO
CM-493

PESO (kg/m)
0.365

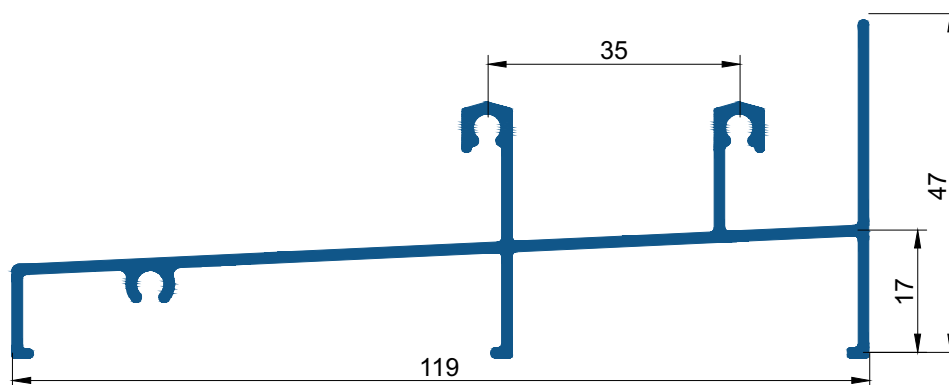


CÓDIGO
ME-013

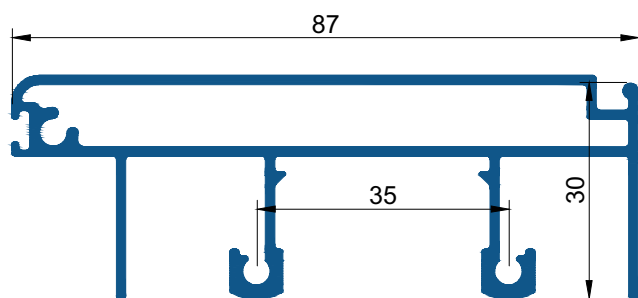
PESO (kg/m)
0.268



CÓDIGO PESO (kg/m)
AT-0341 0.811



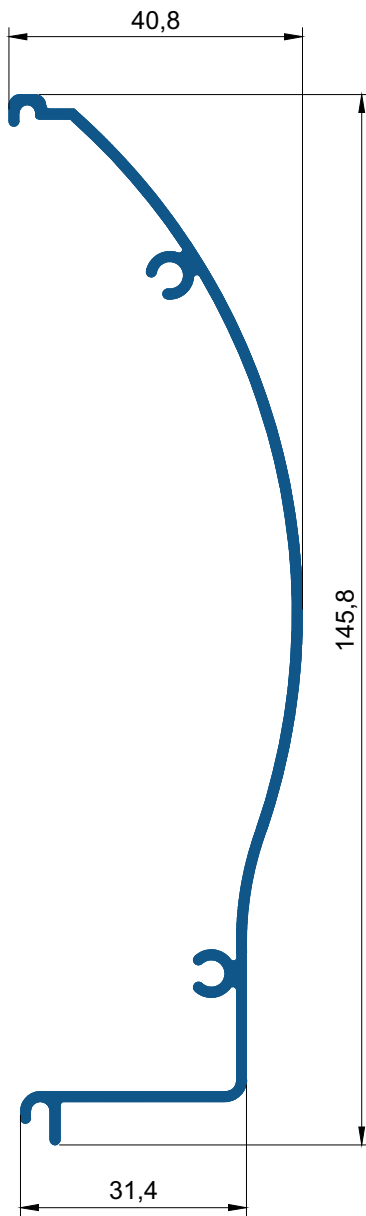
CÓDIGO PESO (kg/m)
AT-0564 1.086



CÓDIGO PESO (kg/m)
AT-0338 1.147

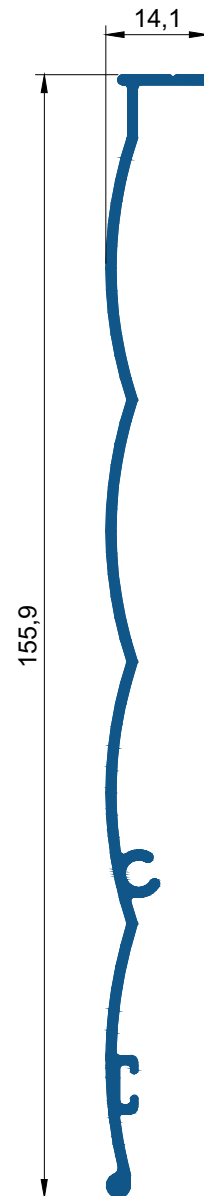


CÓDIGO PESO (kg/m)
AT-0336 0.431



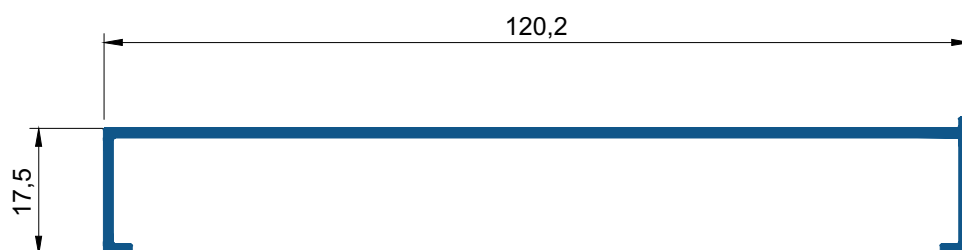
CÓDIGO
AT-0339

PESO (kg/m)
0.857

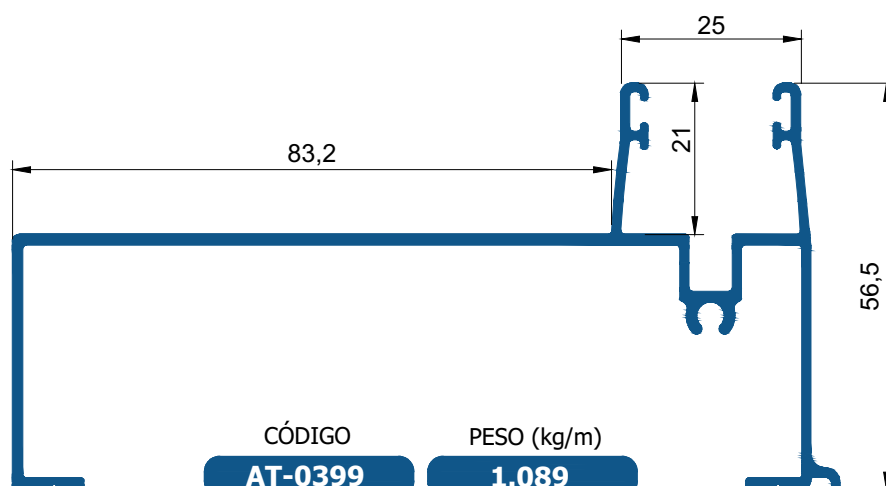


CÓDIGO
AT-0340

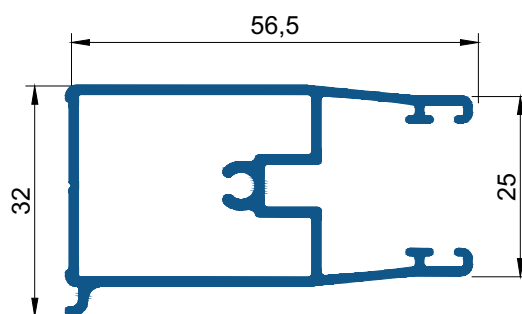
PESO (kg/m)
0.725



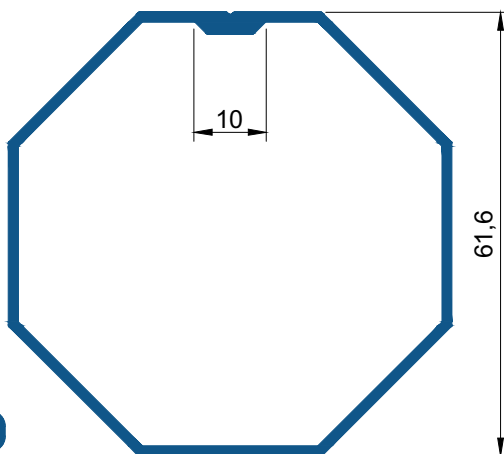
CÓDIGO PESO (kg/m)
AT-0398 0.578



CÓDIGO PESO (kg/m)
AT-0399 1.089



CÓDIGO PESO (kg/m)
AT-0400 0.741

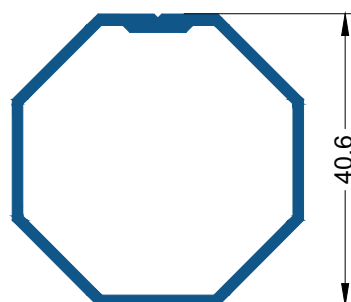


CÓDIGO

AT-0337

PESO (kg/m)

0.792

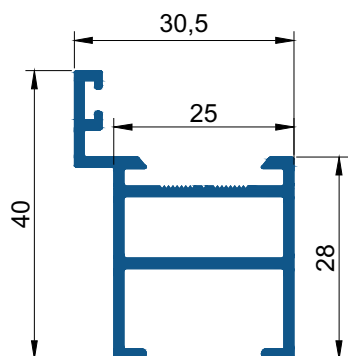


CÓDIGO

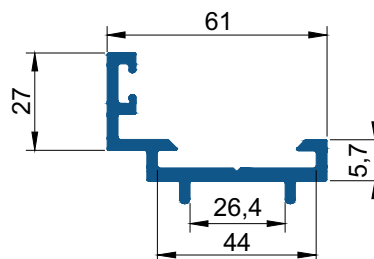
AT-1126

PESO (kg/m)

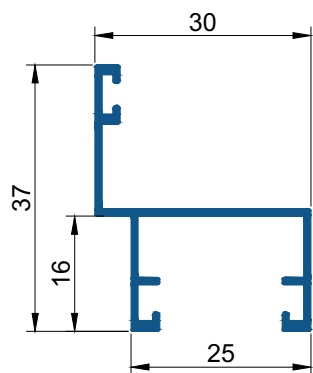
0.542



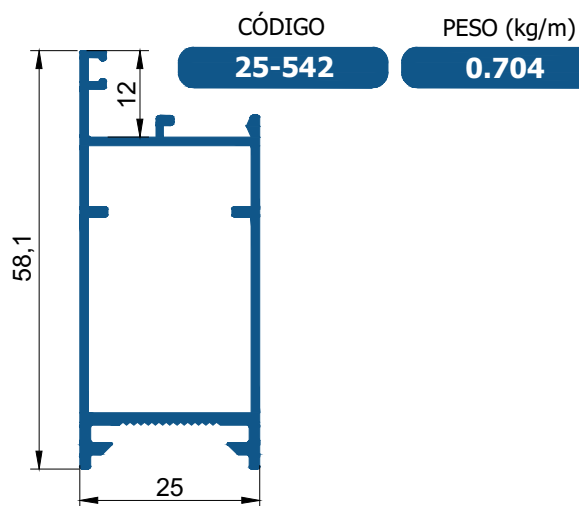
CÓDIGO PESO (kg/m)
25-540 0.560



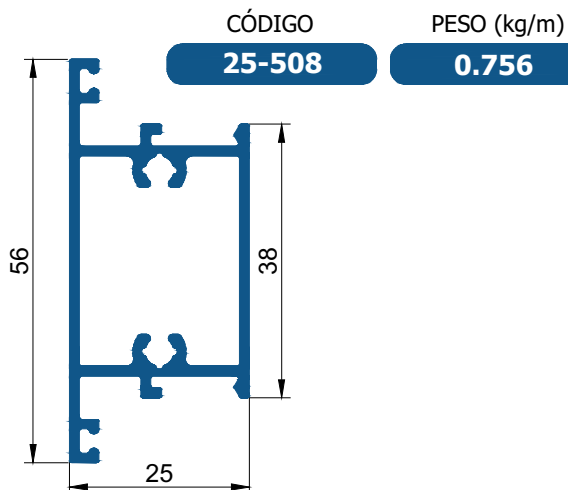
CÓDIGO PESO (kg/m)
25-548 0.293



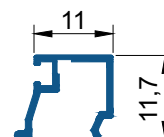
CÓDIGO PESO (kg/m)
25-002 0.351



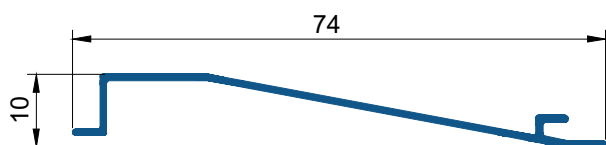
CÓDIGO PESO (kg/m)
25-542 0.704



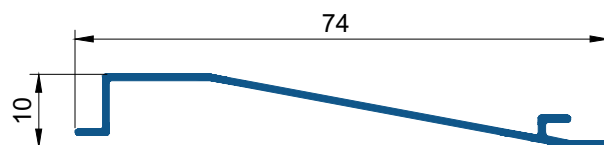
CÓDIGO PESO (kg/m)
25-508 0.756



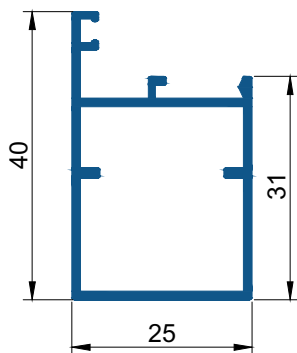
CÓDIGO PESO (kg/m)
BG-001 0.108



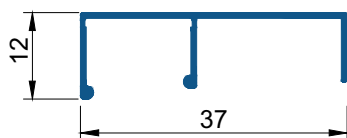
CÓDIGO PESO (kg/m)
VZ-024 0.230



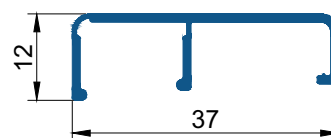
CÓDIGO PESO (kg/m)
US-280 0.230



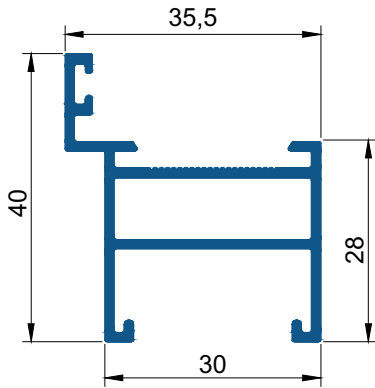
CÓDIGO PESO (kg/m)
25-016 0.429



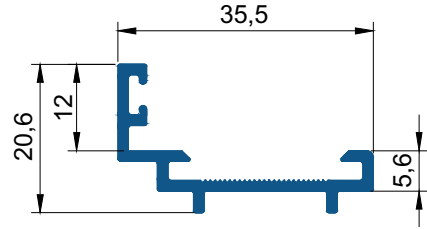
CÓDIGO PESO (kg/m)
MP-347 0.202



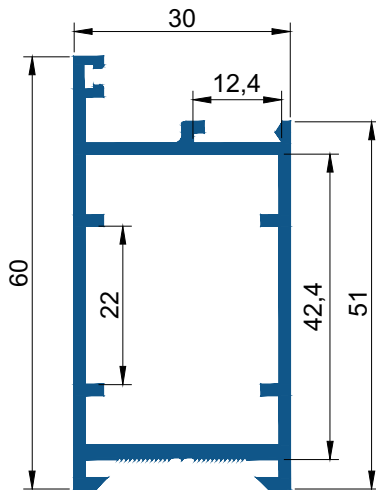
CÓDIGO PESO (kg/m)
MH-0017 0.197



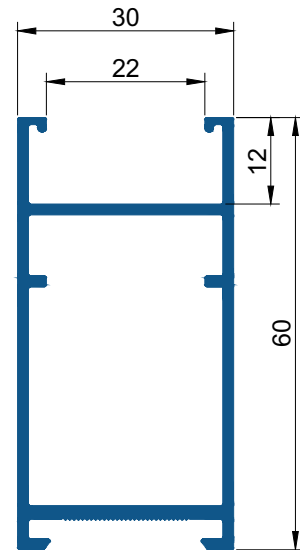
CÓDIGO PESO (kg/m)
W30-023 0.539



CÓDIGO PESO (kg/m)
W30-034 0.292

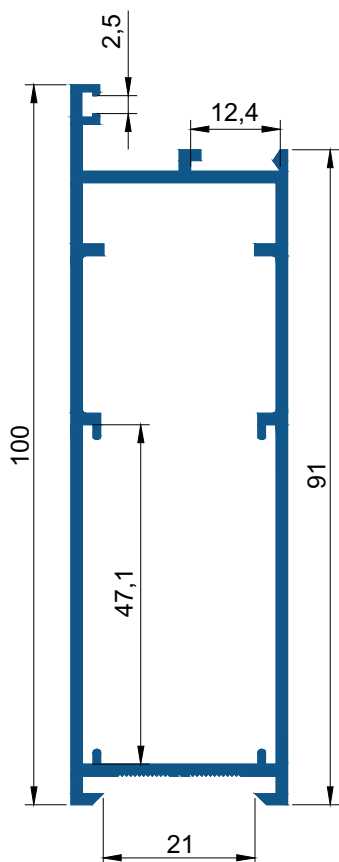


CÓDIGO PESO (kg/m)
W30-026 0.792



CÓDIGO PESO (kg/m)
W30-077 0.796

SOB CONSULTA

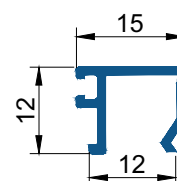


CÓDIGO

W30-082

PESO (kg/m)

1.195

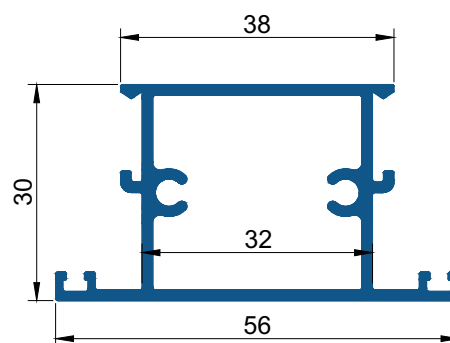


CÓDIGO

BG-010

PESO (kg/m)

0.119

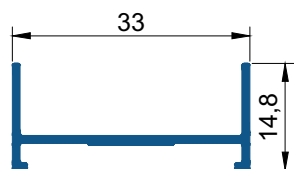


CÓDIGO

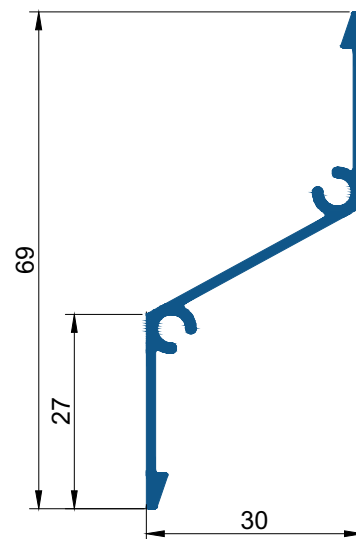
W30-025

PESO (kg/m)

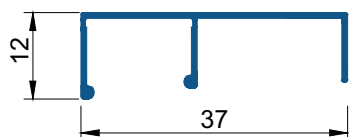
0.752



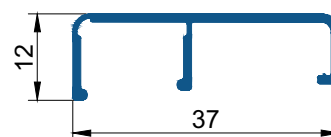
CÓDIGO PESO (kg/m)
W28-514 0.195



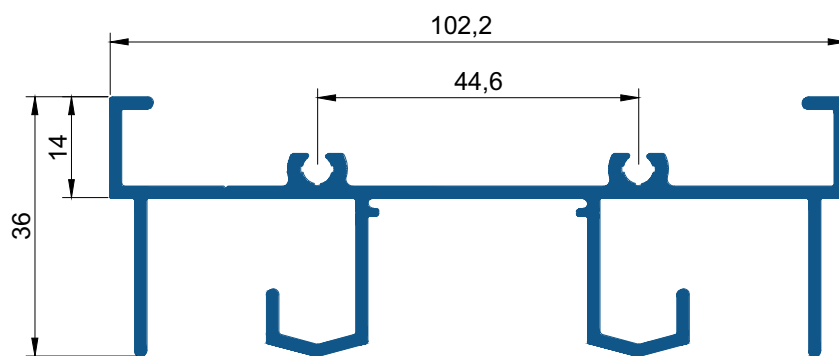
CÓDIGO PESO (kg/m)
VZ-060 0.399



CÓDIGO PESO (kg/m)
MP-347 0.202



CÓDIGO PESO (kg/m)
MH-0017 0.197

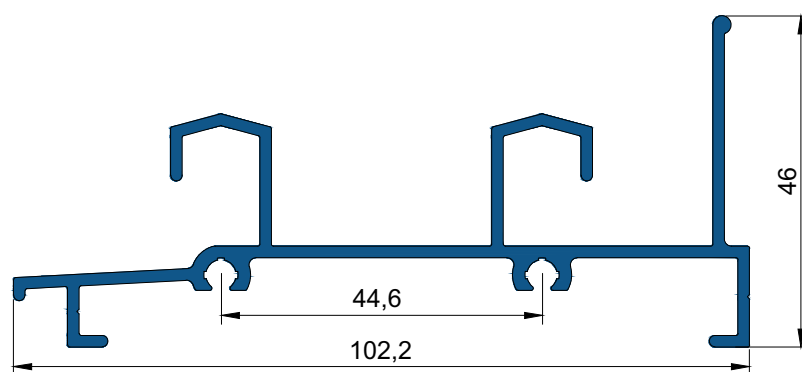


CÓDIGO

W32-044

PESO (kg/m)

1.247

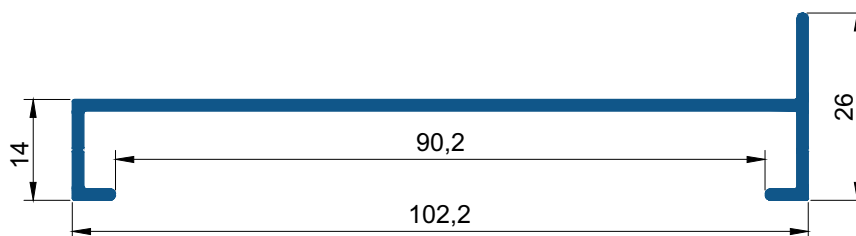


CÓDIGO

W32-047

PESO (kg/m)

1.133

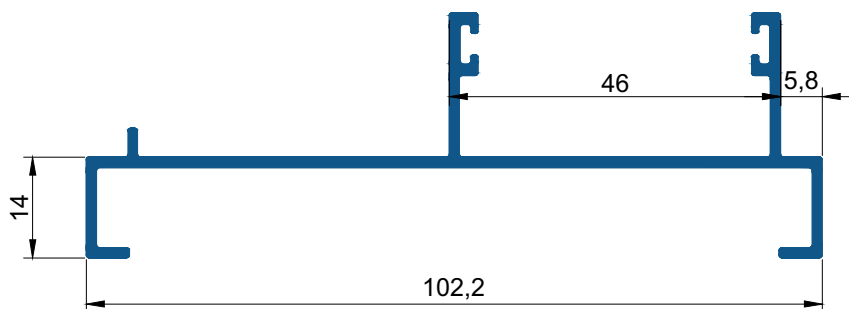


CÓDIGO

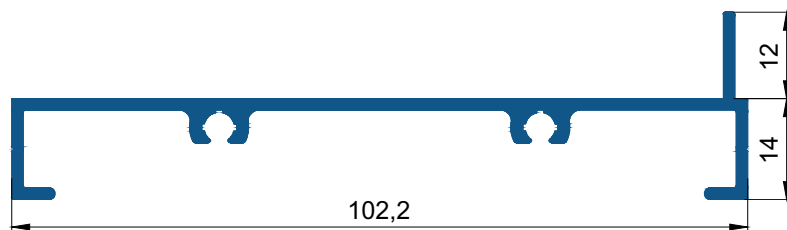
W32-002

PESO (kg/m)

0.638

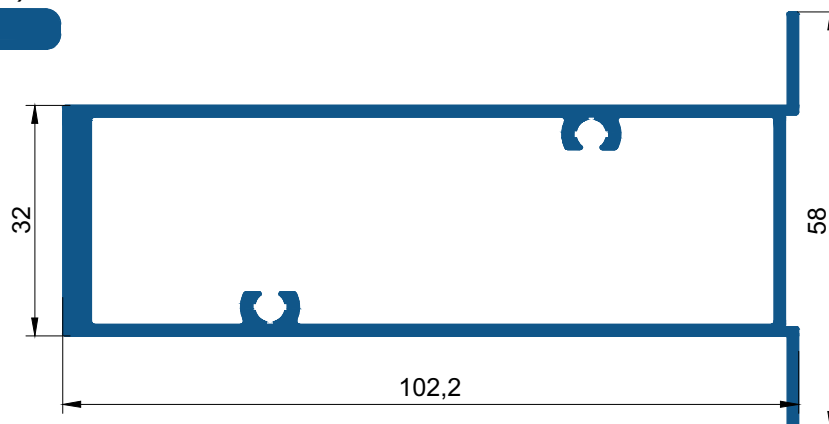


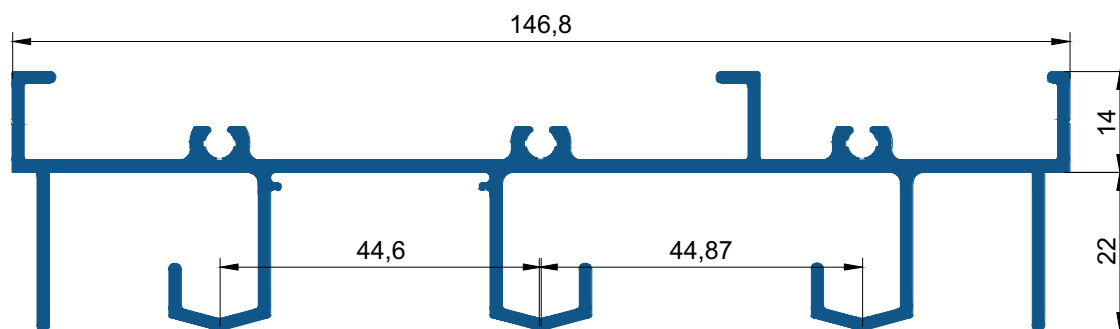
CÓDIGO PESO (kg/m)
W32-124 **0.773**



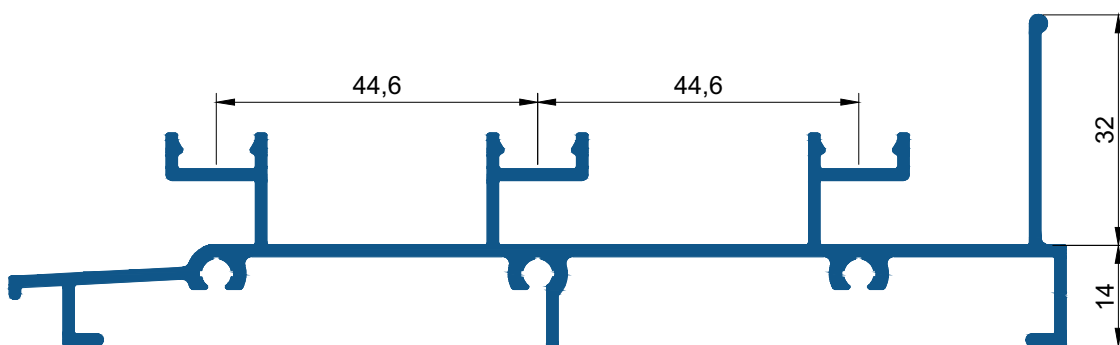
CÓDIGO PESO (kg/m)
W32-003 **0.756**

CÓDIGO PESO (kg/m)
W32-176 **1.542**

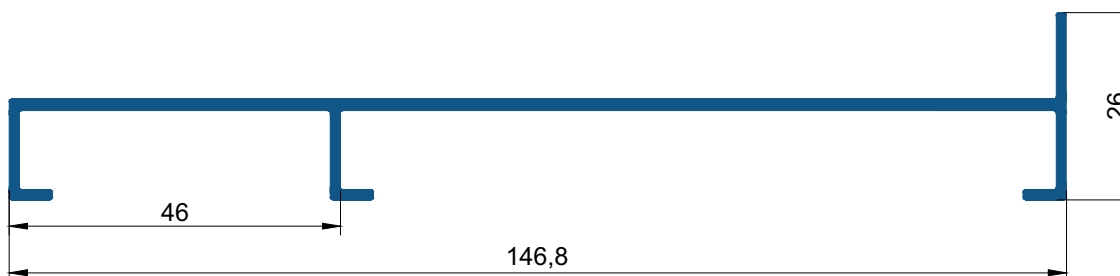




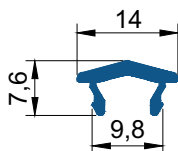
CÓDIGO **W32-062** PESO (kg/m) **1.766**



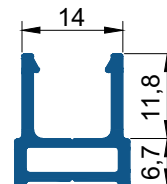
CÓDIGO **W32-116** PESO (kg/m) **1.551**



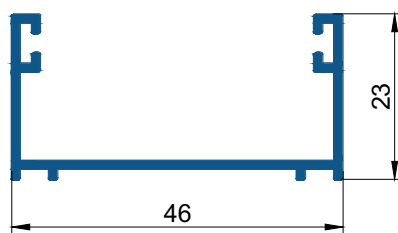
CÓDIGO **W32-158** PESO (kg/m) **0.876**



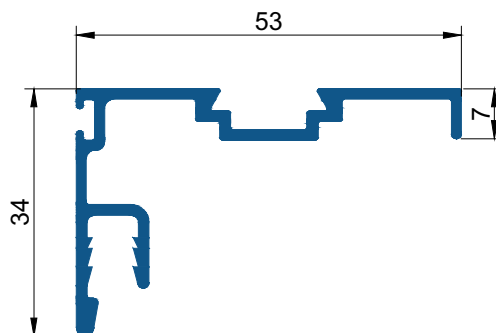
CÓDIGO PESO (kg/m)
W32-111 0.096



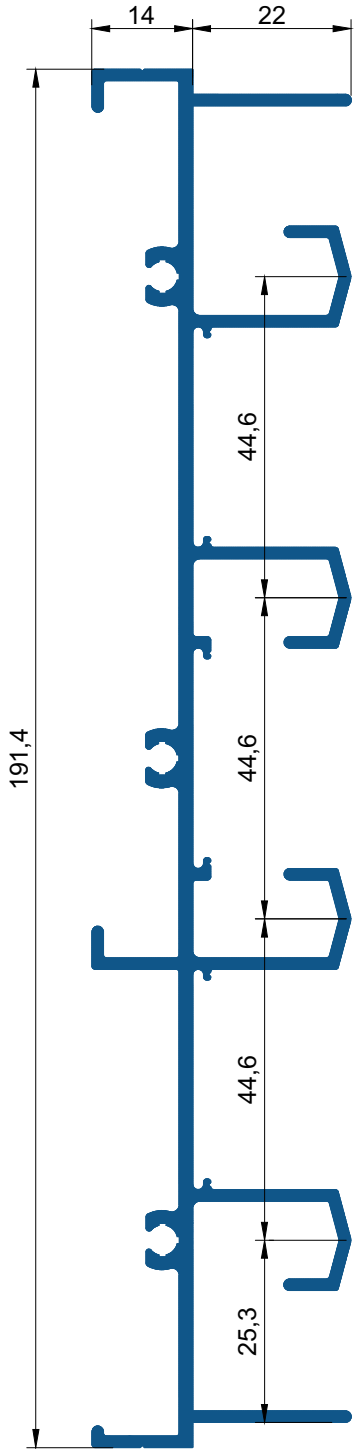
CÓDIGO PESO (kg/m)
W32-157 0.250



CÓDIGO PESO (kg/m)
W32-028 0.454

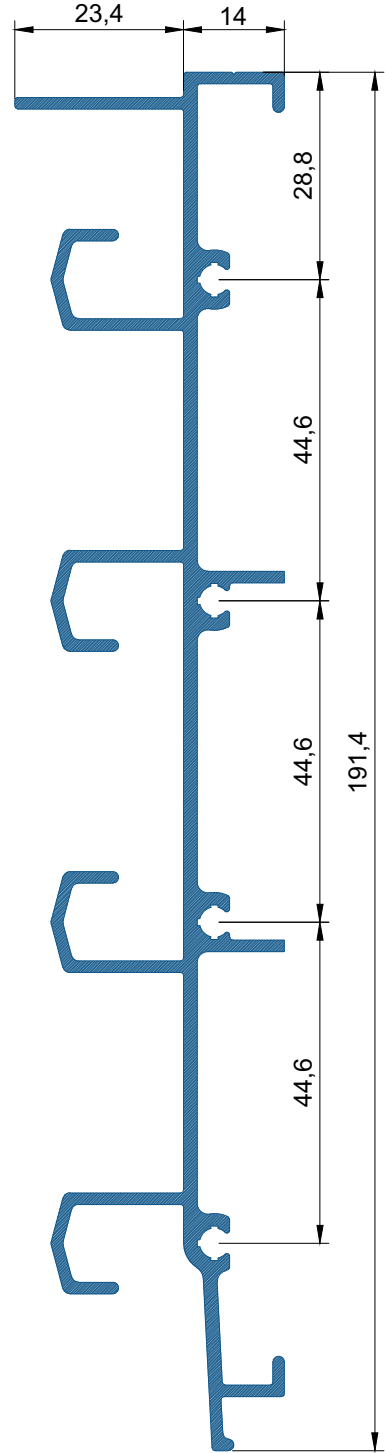


CÓDIGO PESO (kg/m)
W32-023 0.550



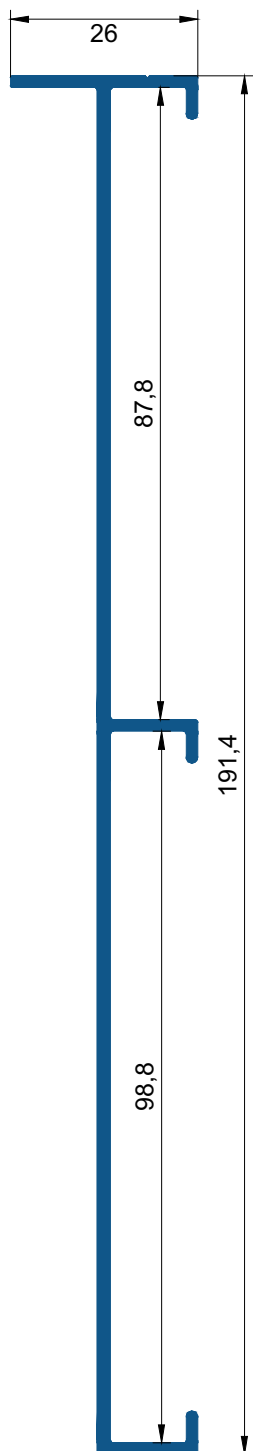
CÓDIGO
W32-070

PESO (kg/m)
2.273

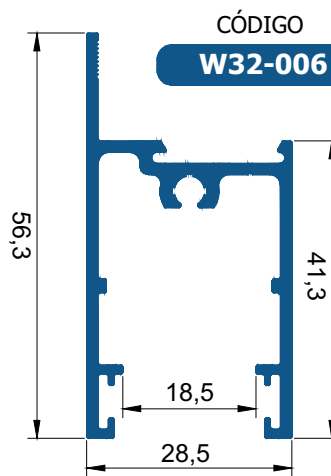


CÓDIGO
W32-071

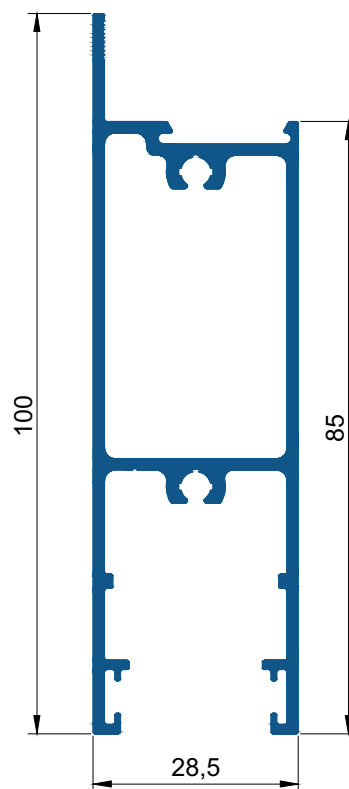
PESO (kg/m)
2.120



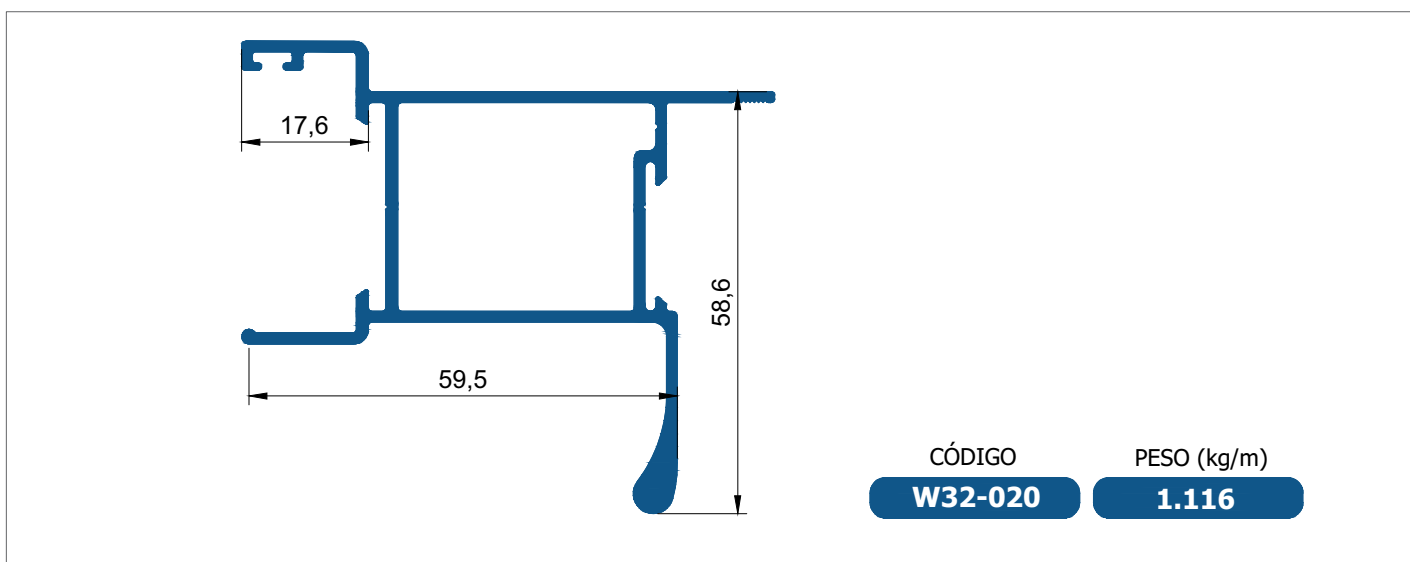
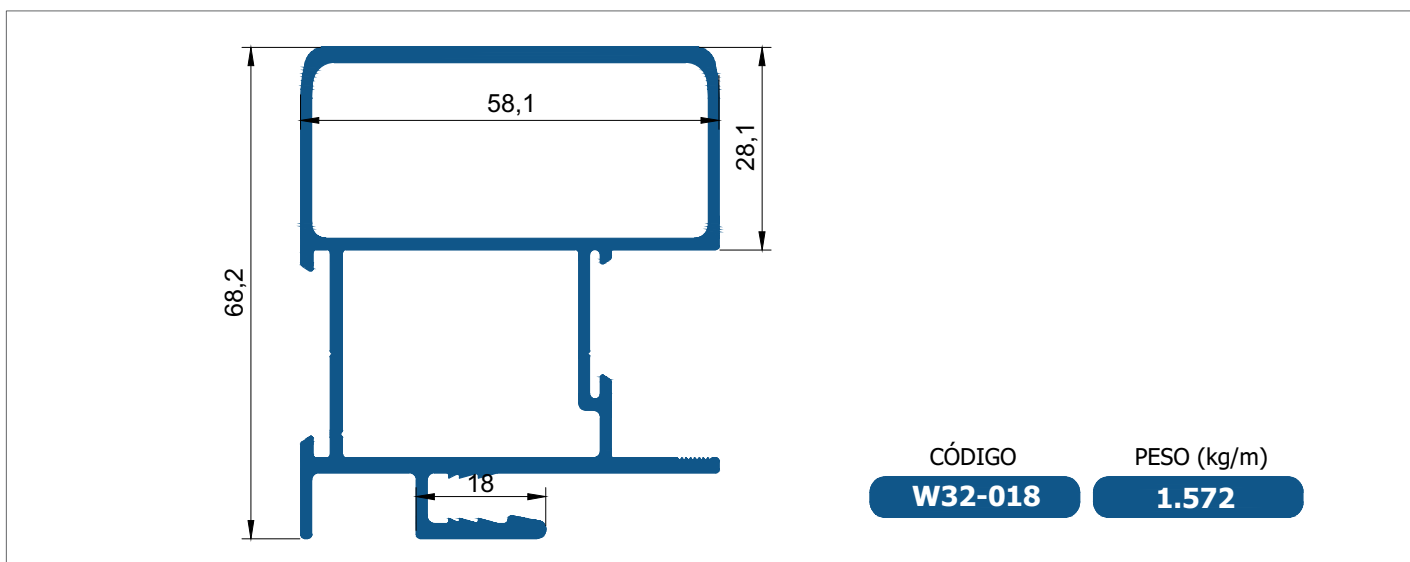
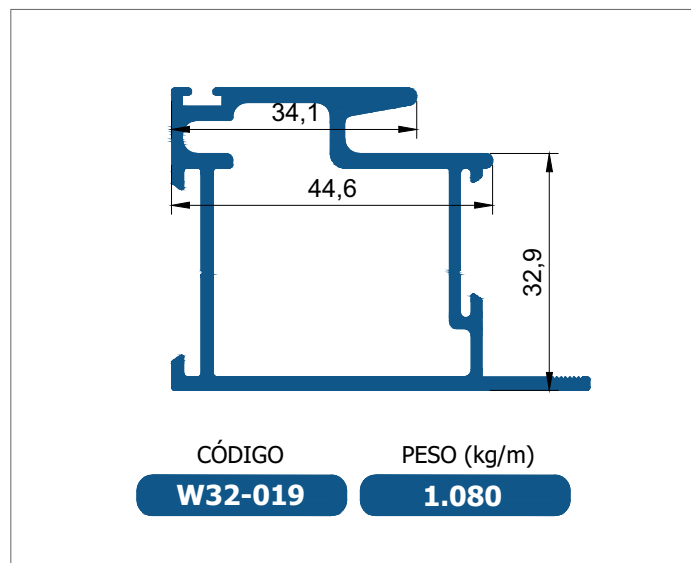
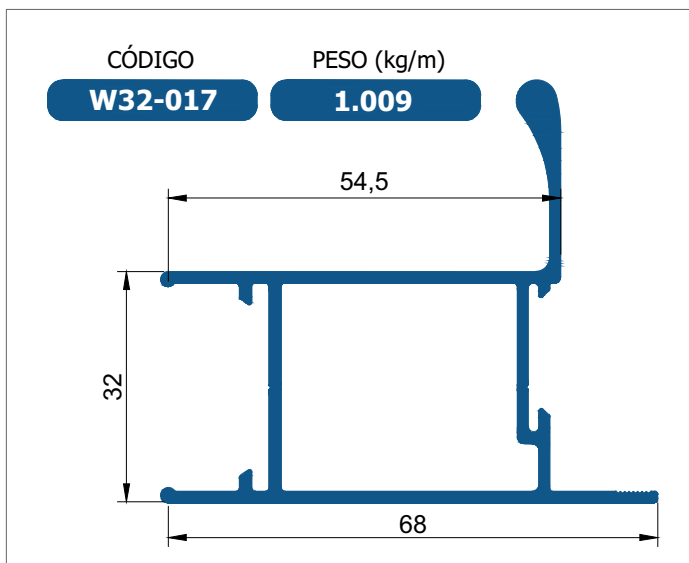
CÓDIGO **W32-072** PESO (kg/m) **1.250**

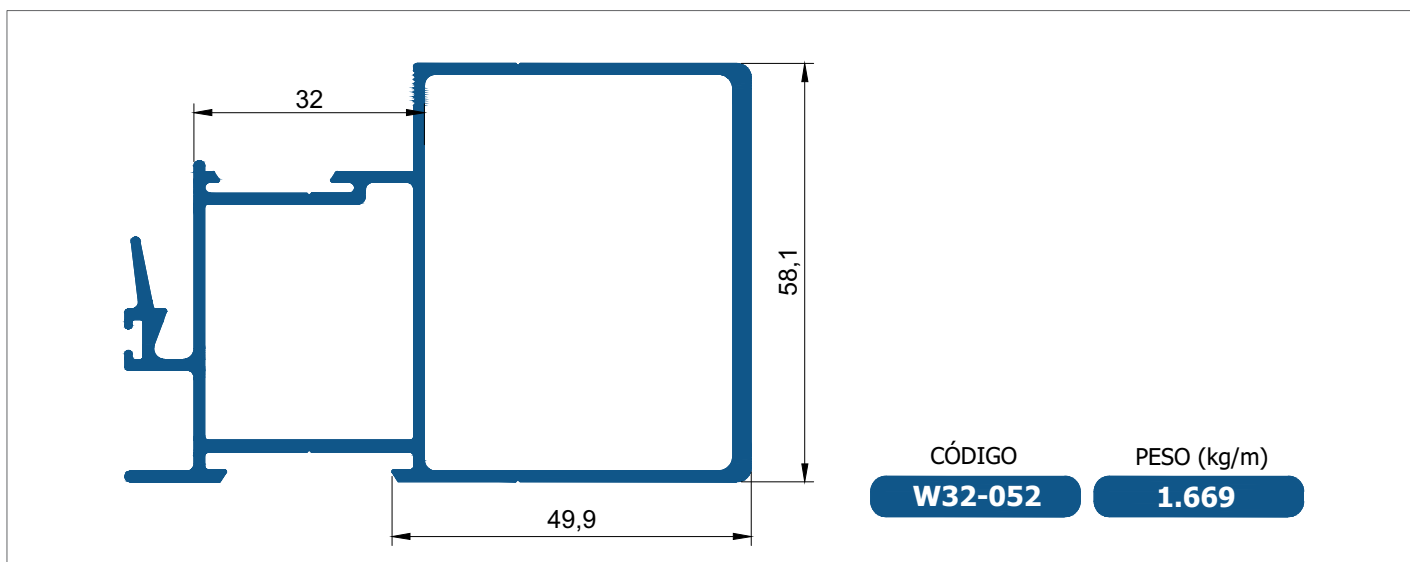
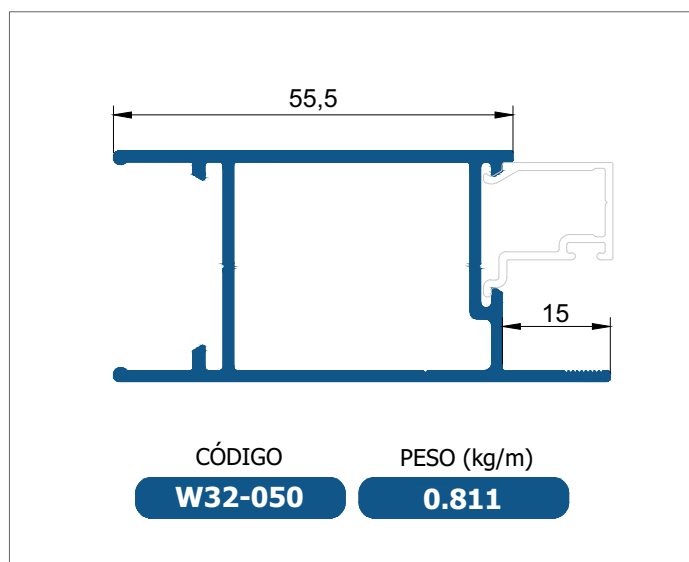
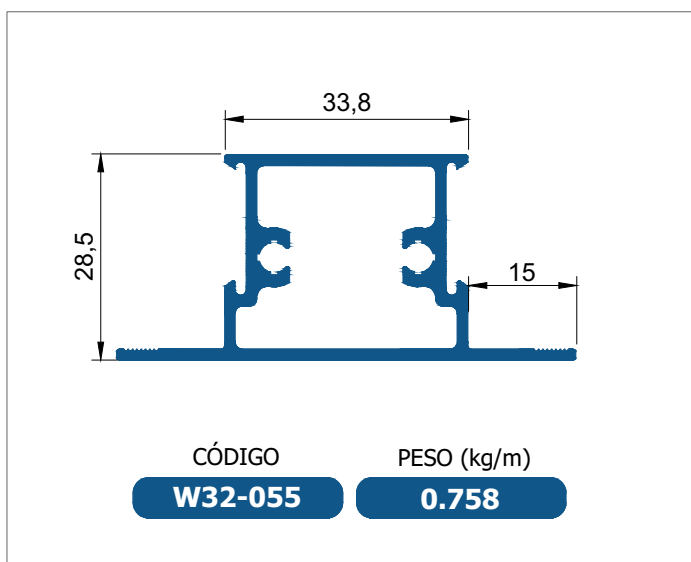
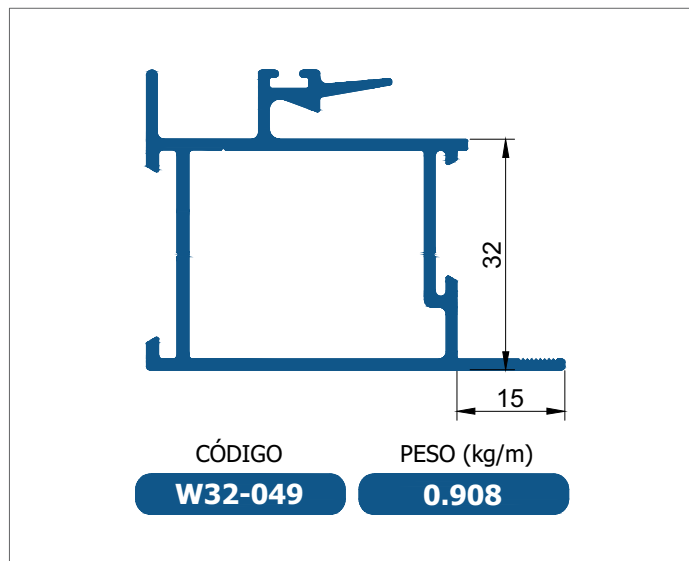
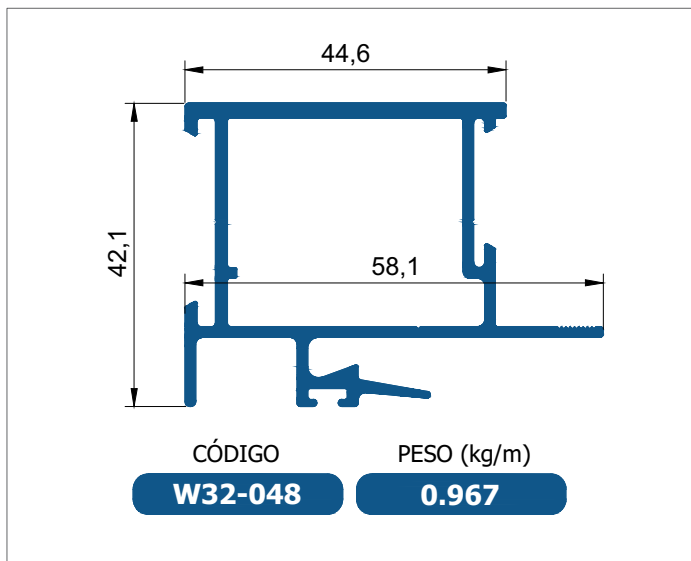


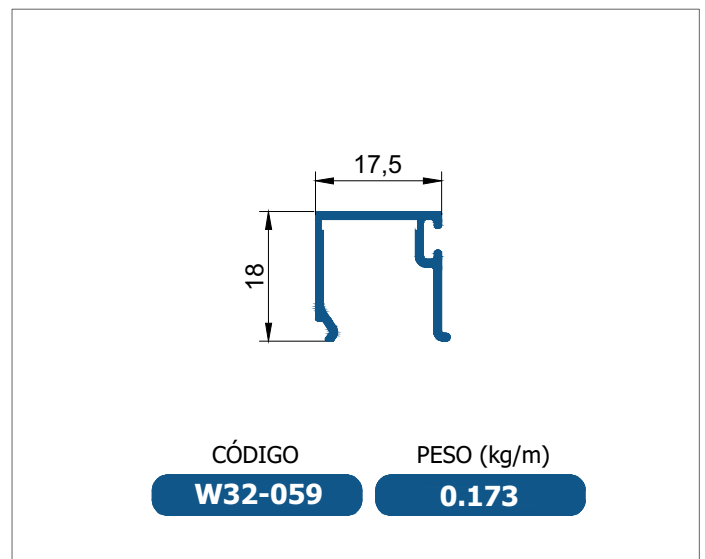
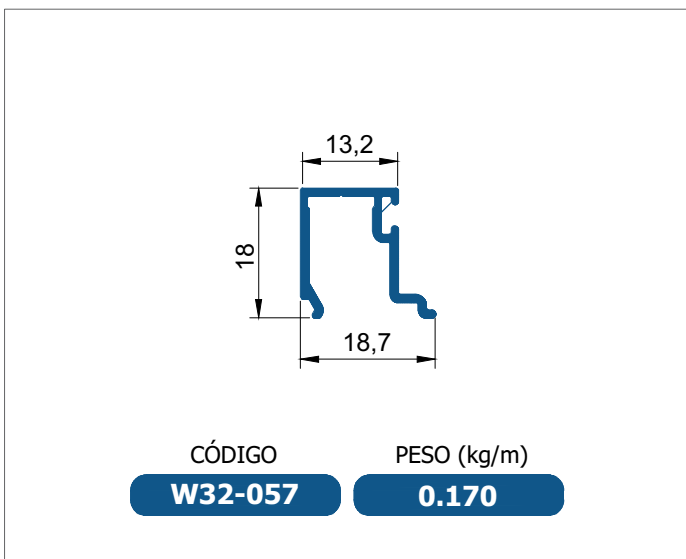
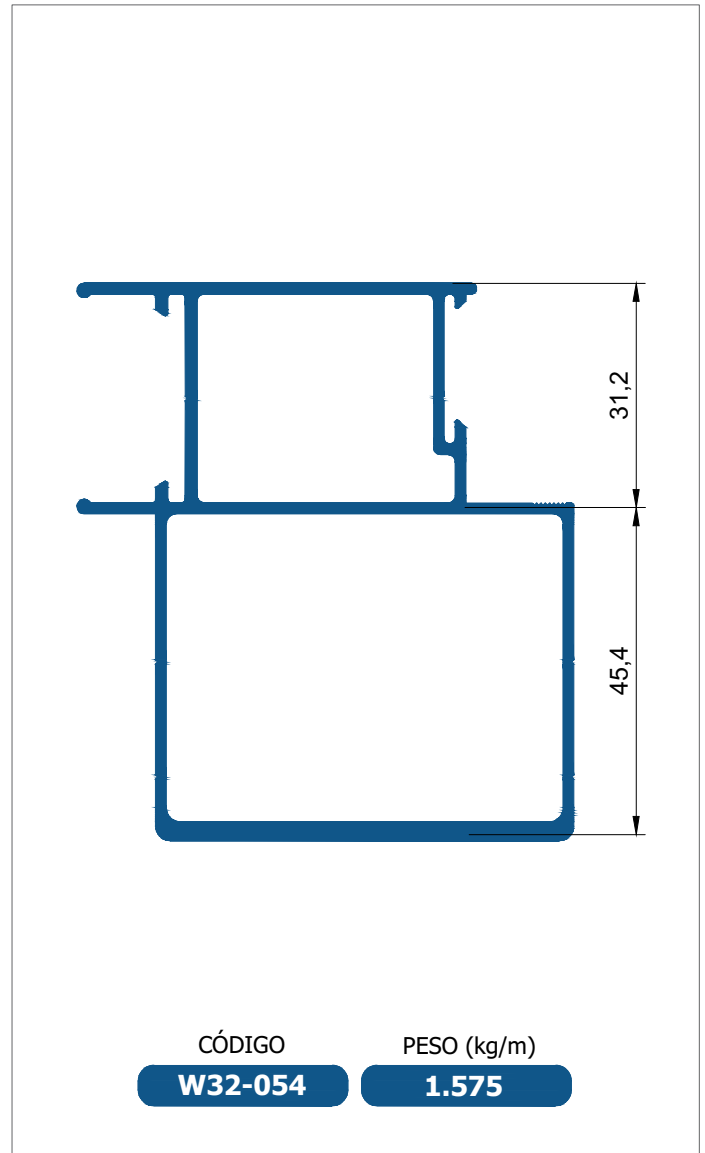
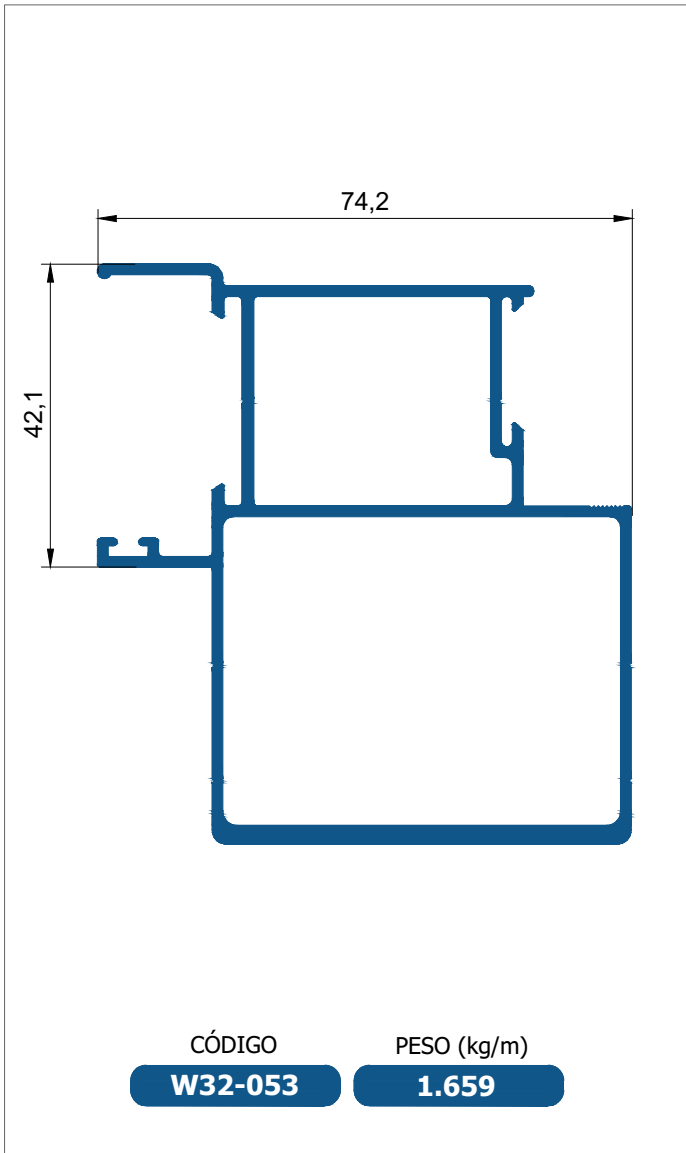
CÓDIGO **W32-006** PESO (kg/m) **0.677**

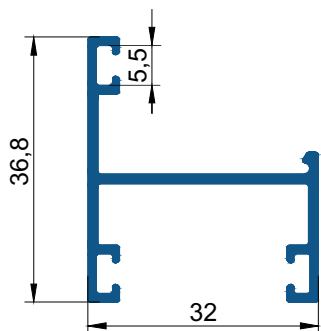


CÓDIGO **W32-007** PESO (kg/m) **1.230**

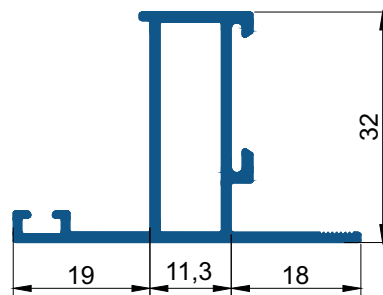




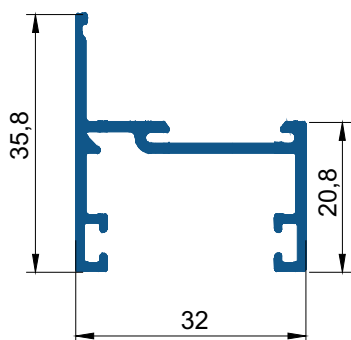




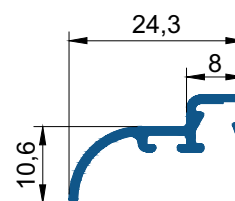
CÓDIGO PESO (kg/m)
W32-068 0.400



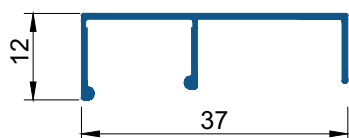
CÓDIGO PESO (kg/m)
W32-085 0.518



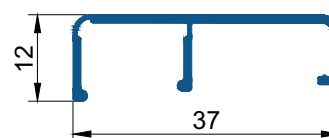
CÓDIGO PESO (kg/m)
W32-083 0.417



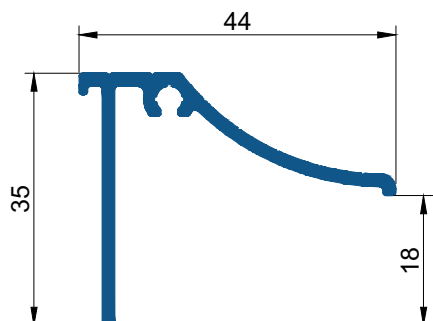
CÓDIGO PESO (kg/m)
W32-091 0.151



CÓDIGO PESO (kg/m)
MP-347 0.202



CÓDIGO PESO (kg/m)
MH-0017 0.197

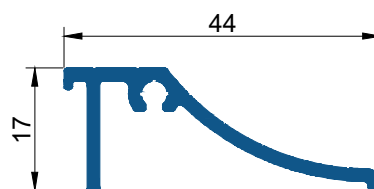


CÓDIGO

CM-169

PESO (kg/m)

0.435

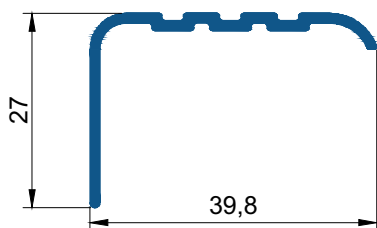


CÓDIGO

CM-493

PESO (kg/m)

0.365

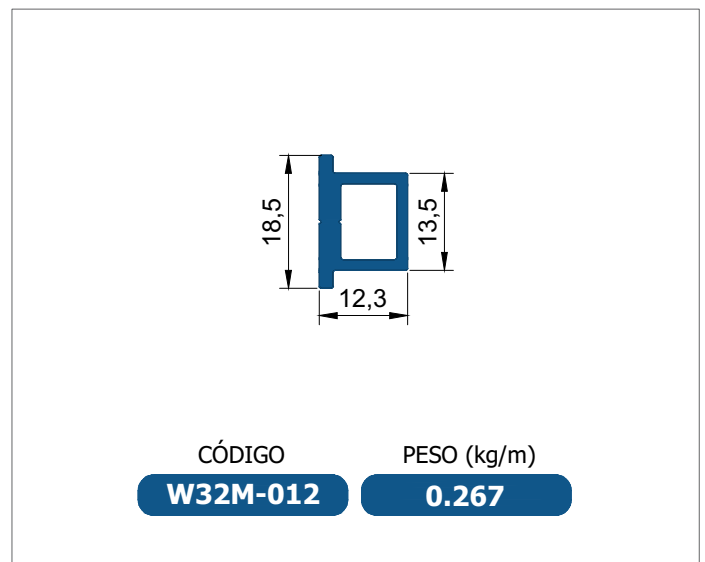
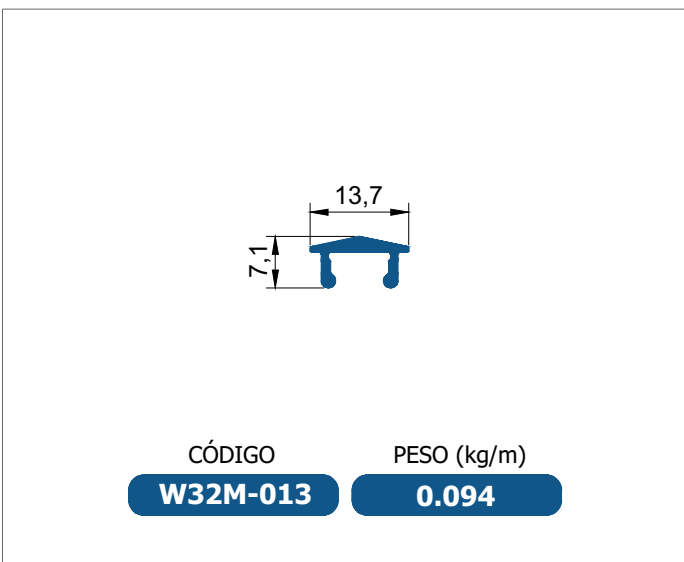
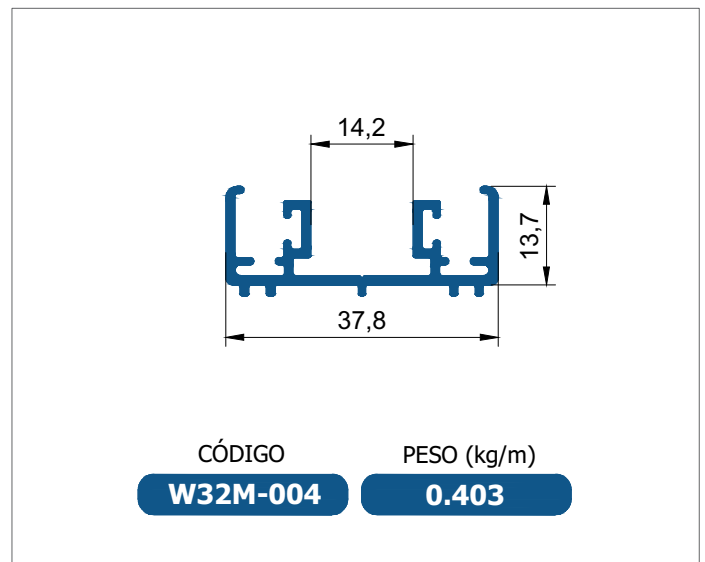
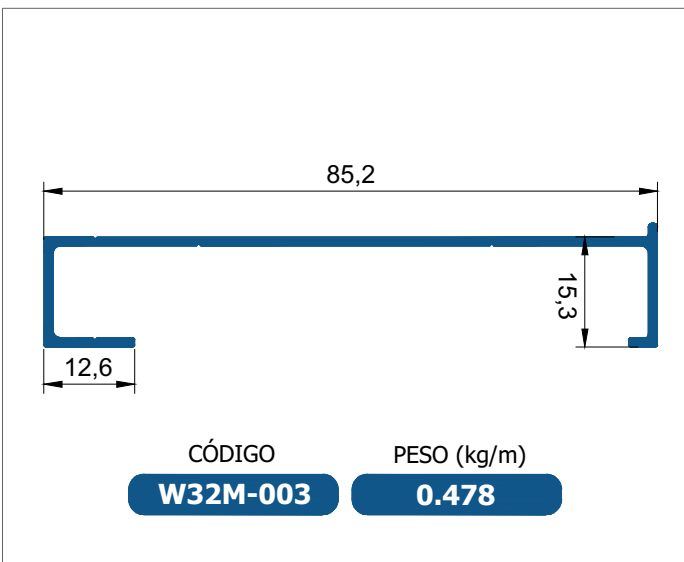
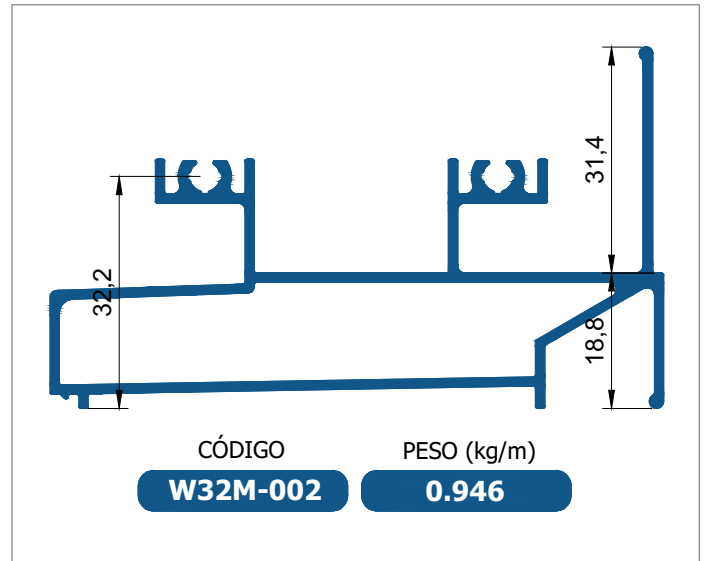
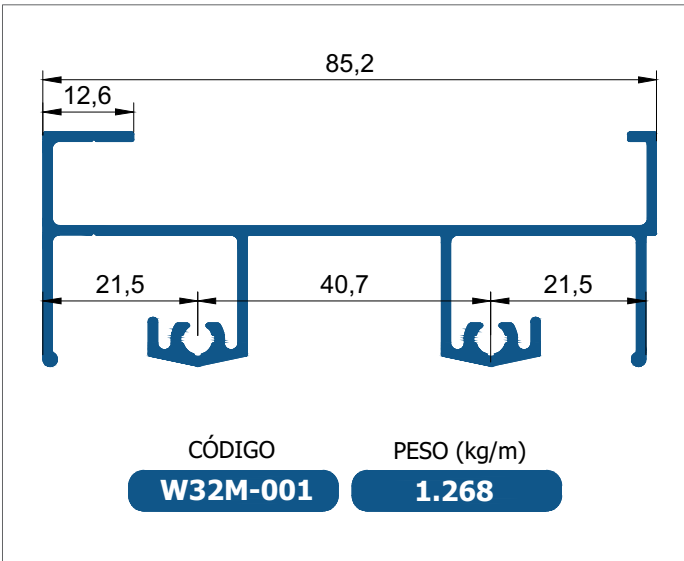


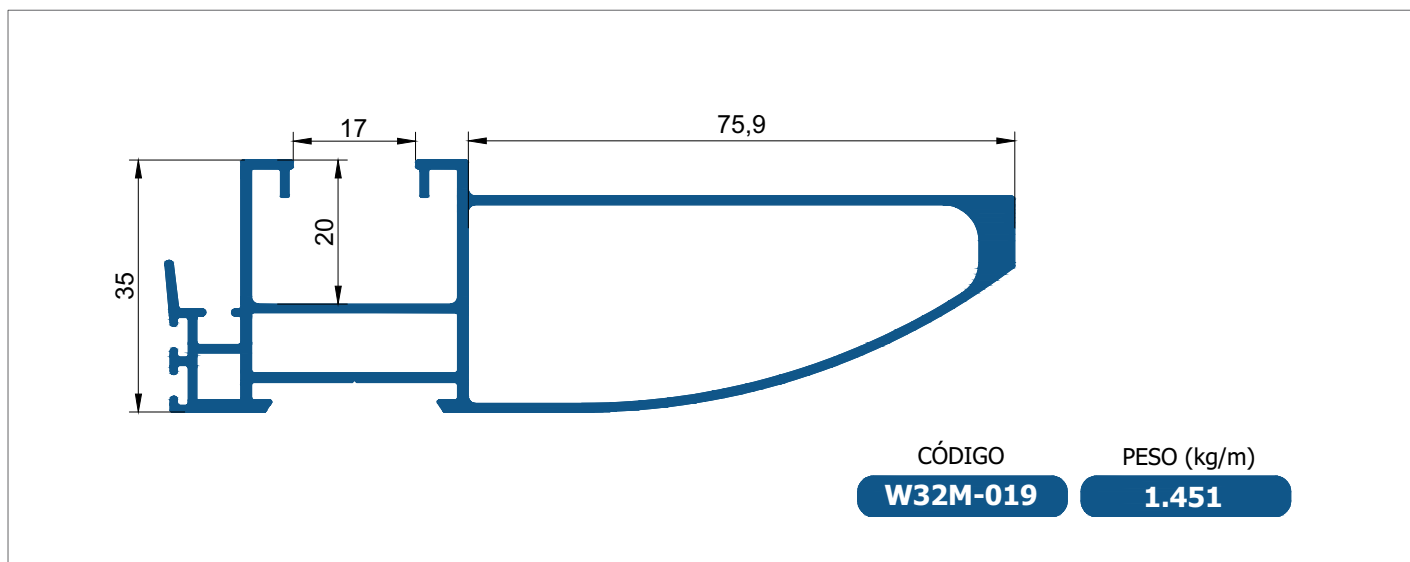
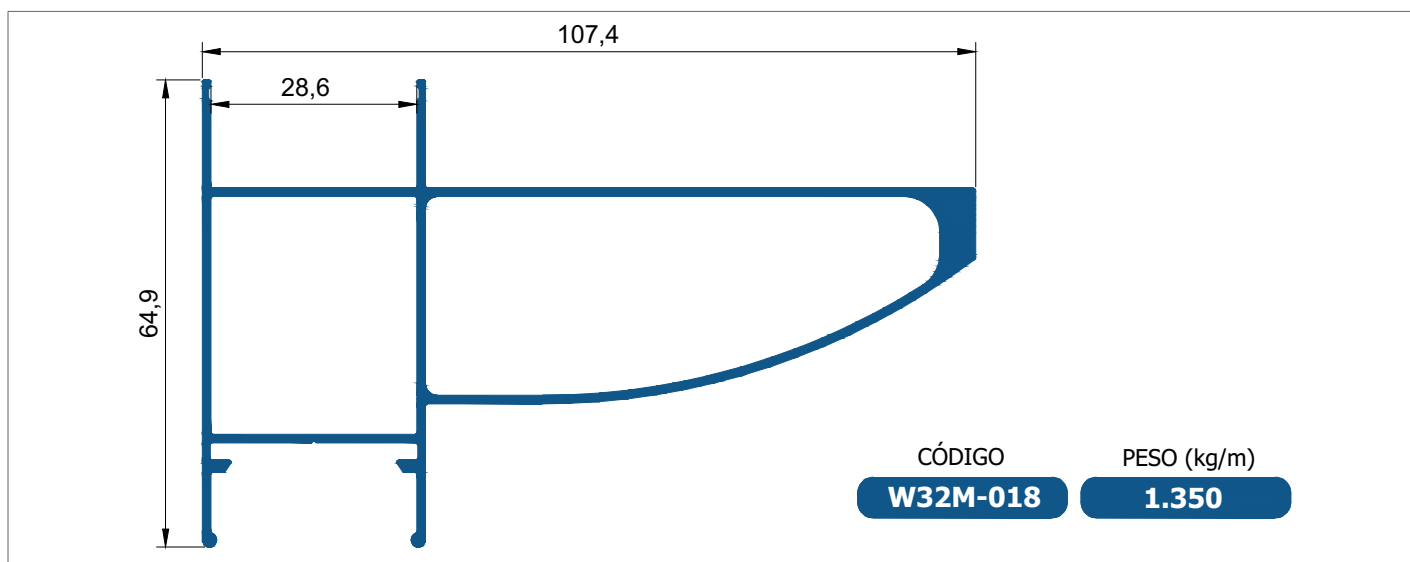
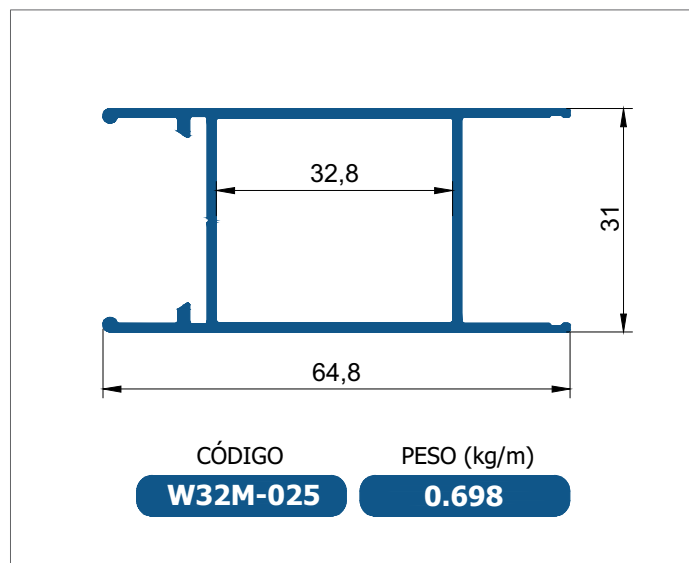
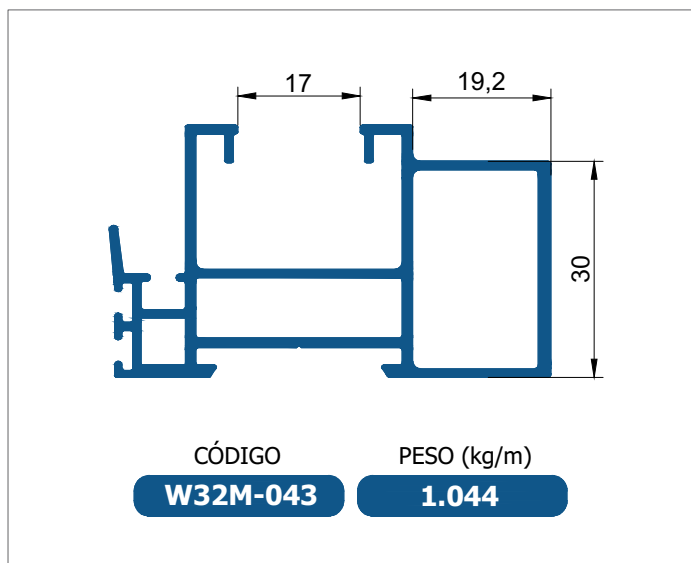
CÓDIGO

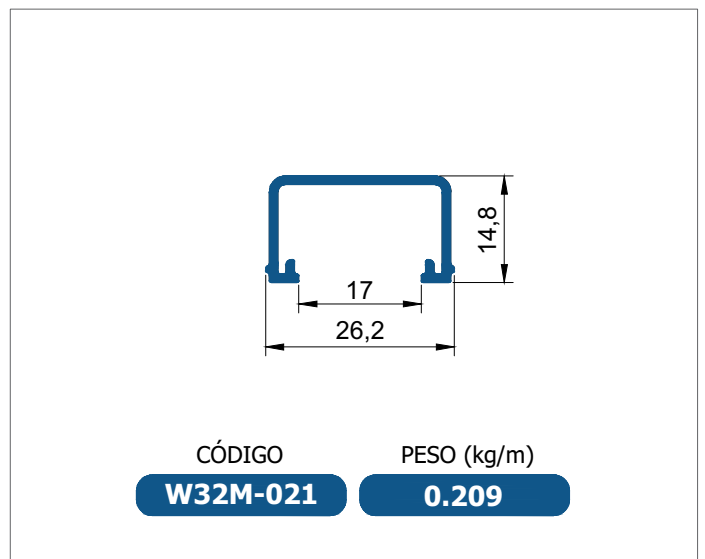
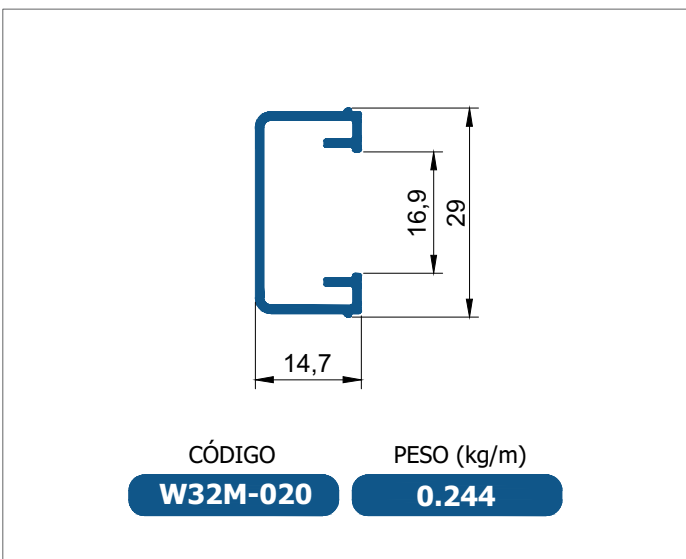
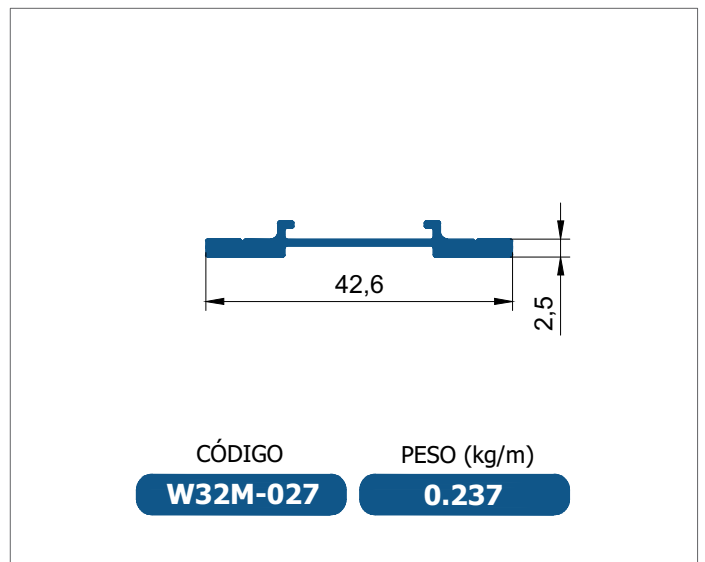
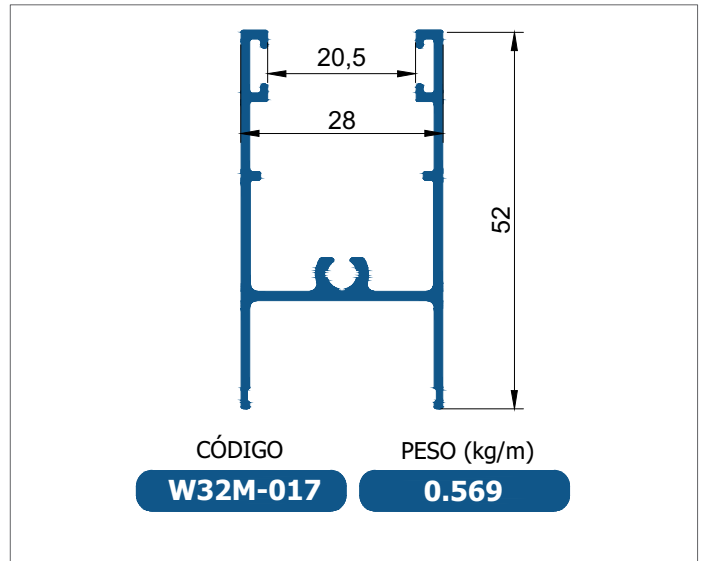
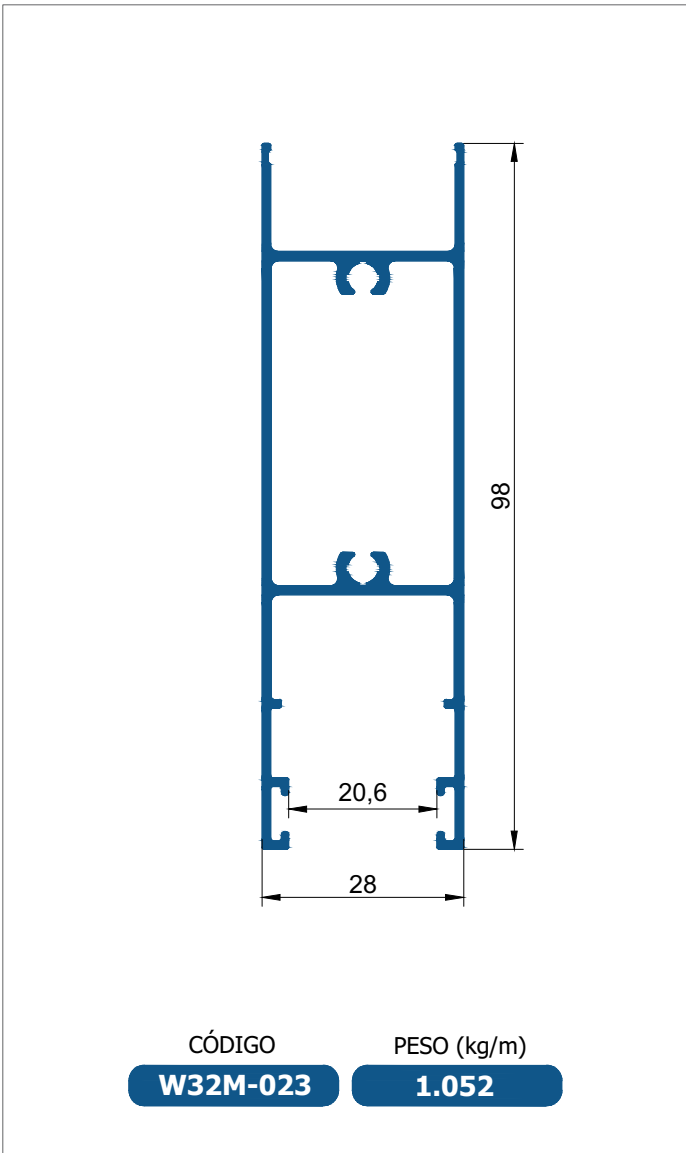
ME-013

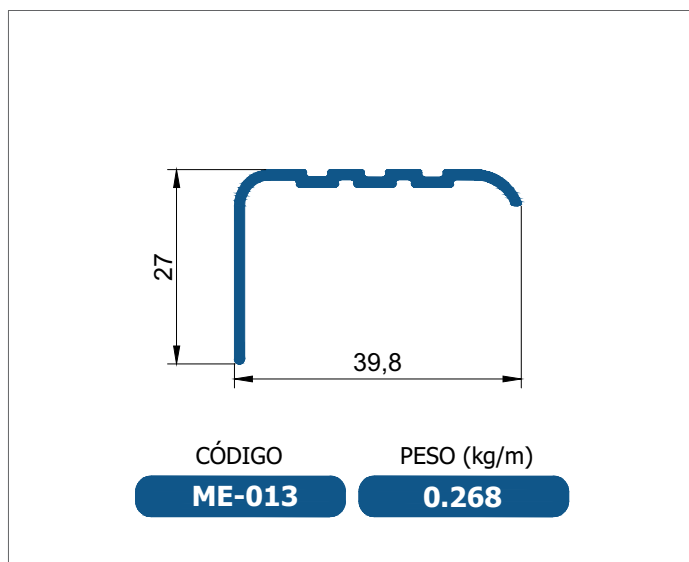
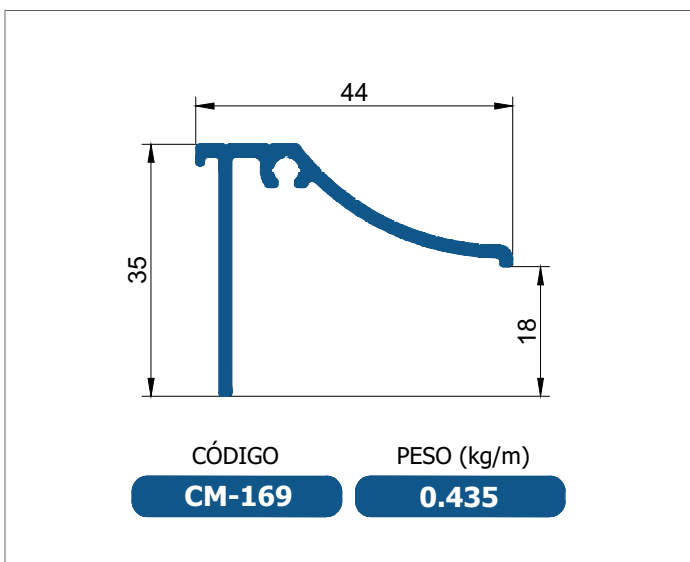
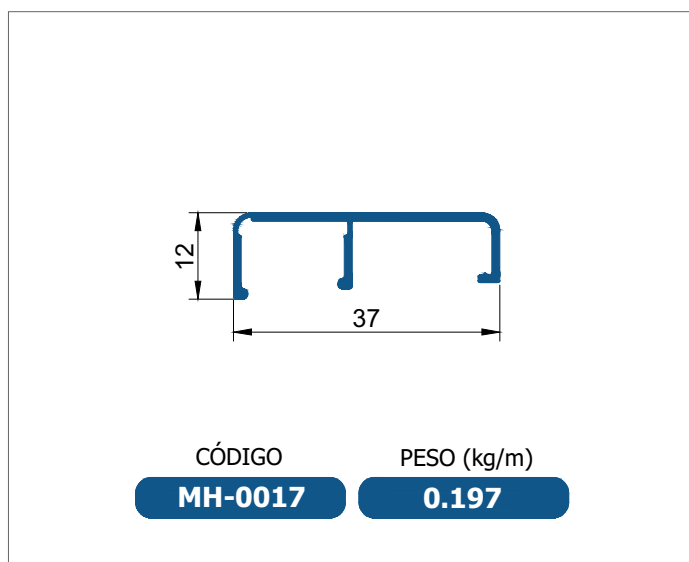
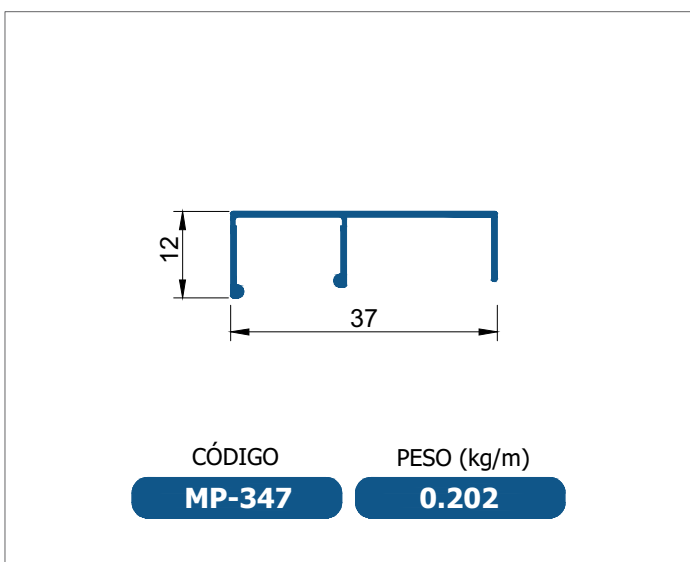
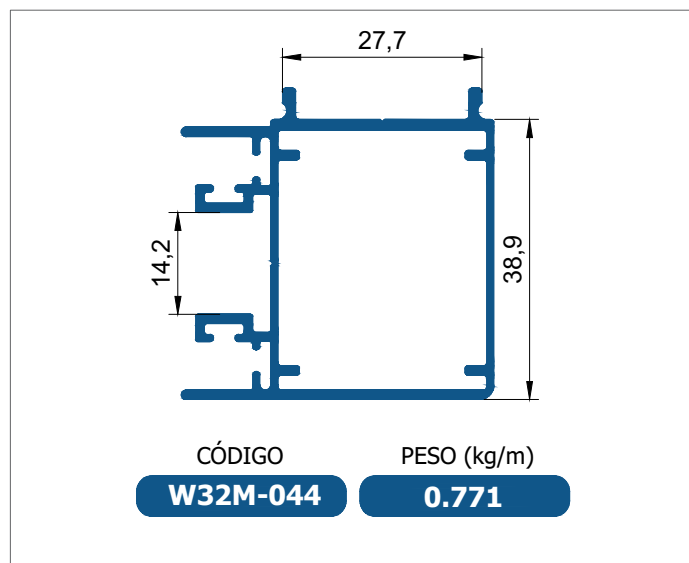
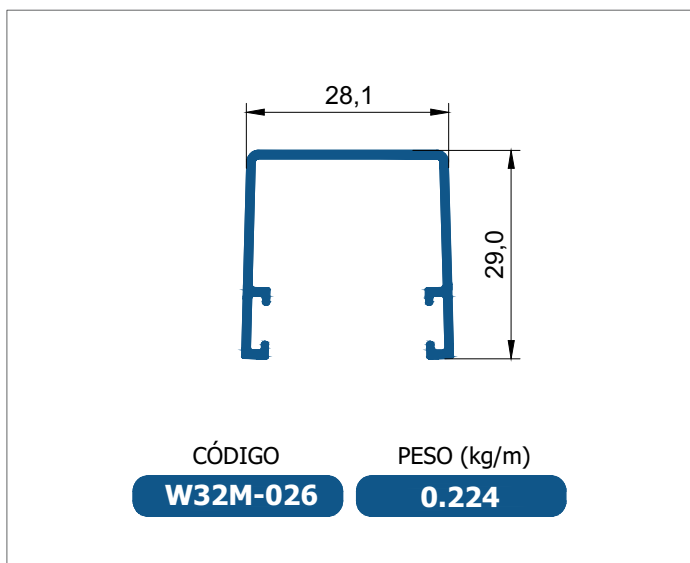
PESO (kg/m)

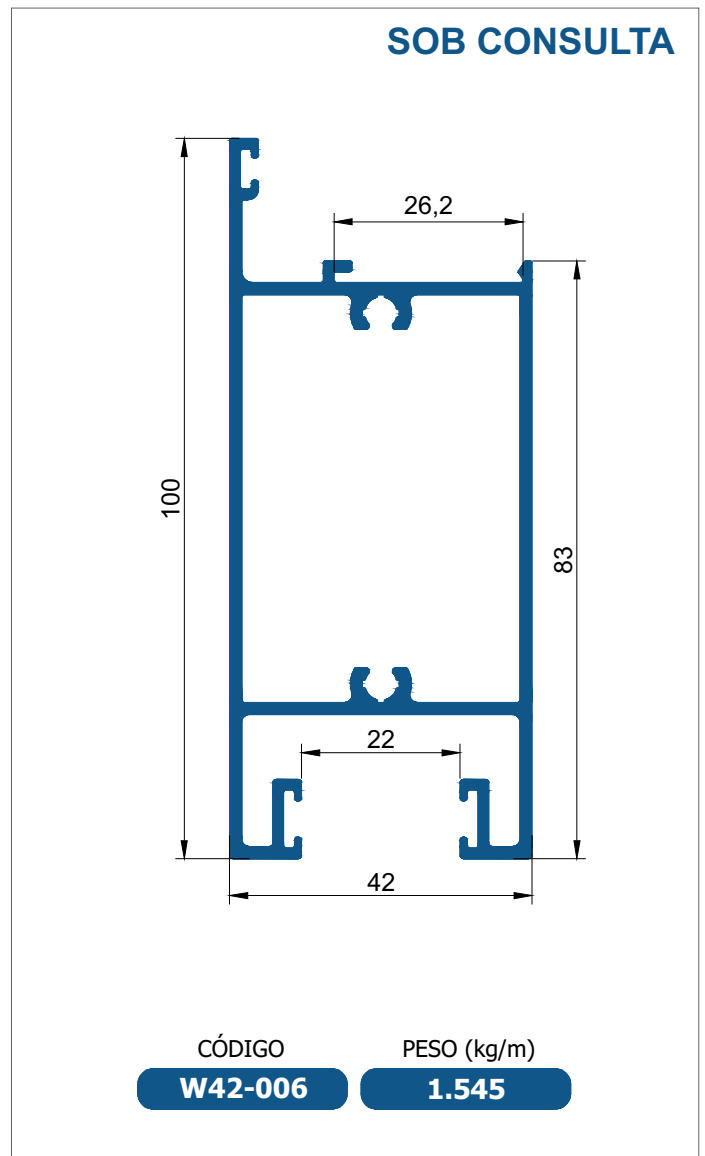
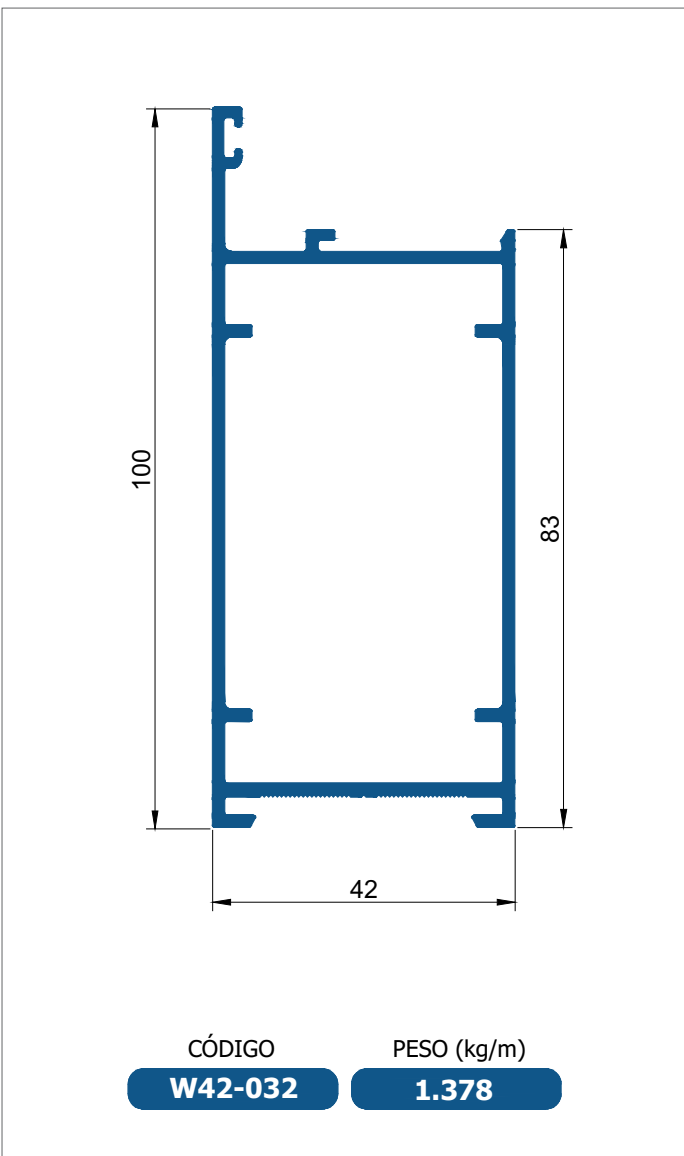
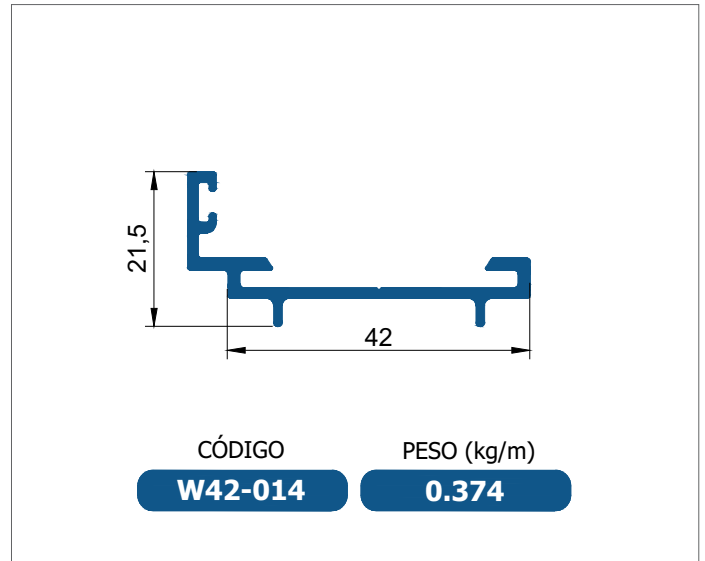
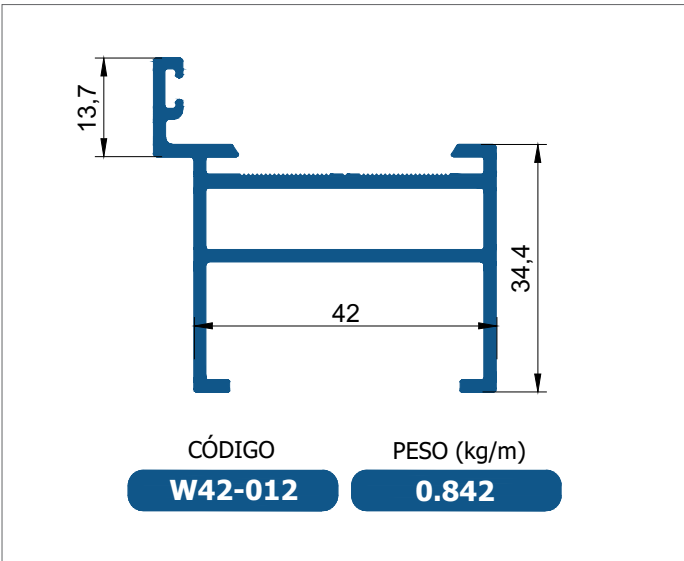
0.268

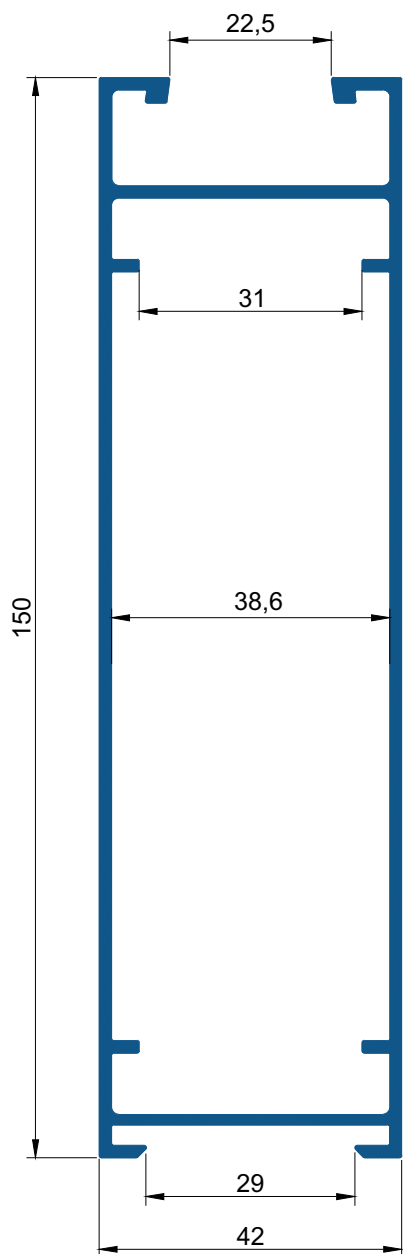




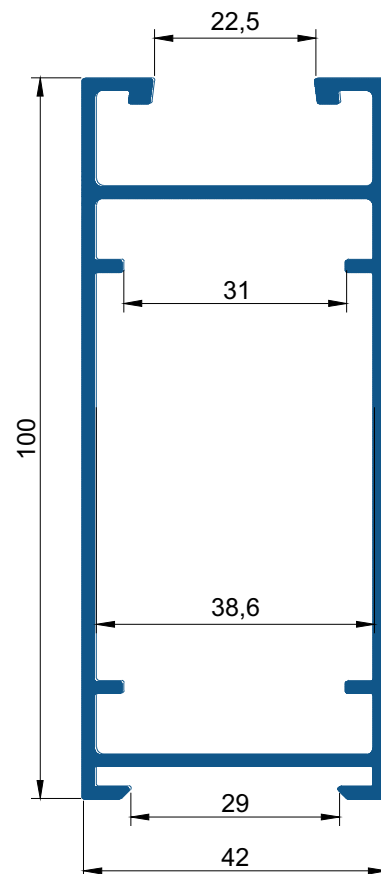






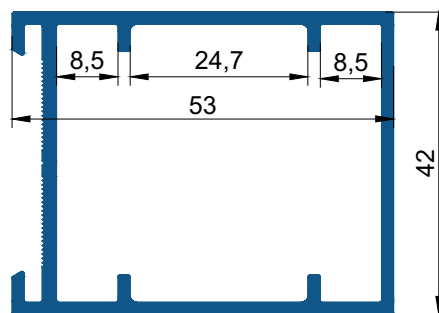


CÓDIGO **W42-176** PESO (kg/m) **1.955**

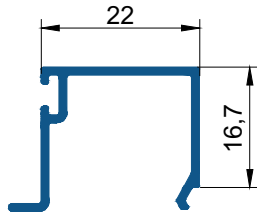


CÓDIGO **W42-173** PESO (kg/m) **1.494**

SOB CONSULTA



CÓDIGO **W42-999** PESO (kg/m) **0.870**

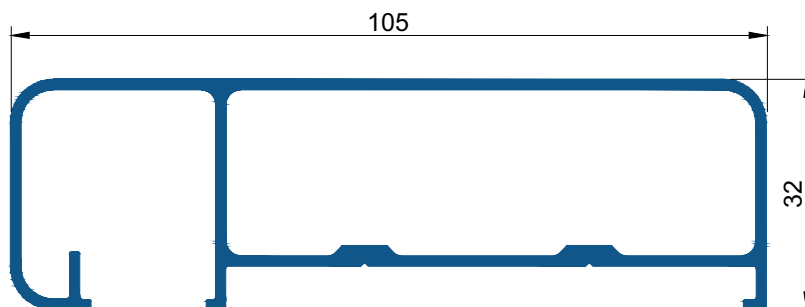


CÓDIGO

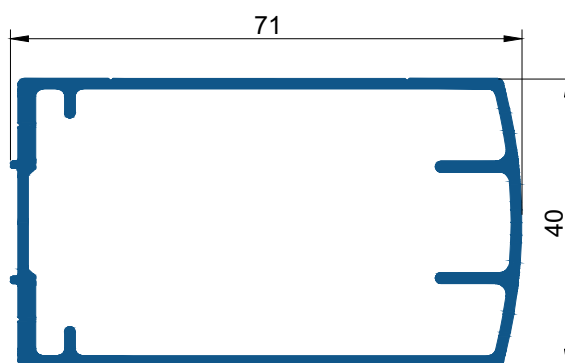
W42-037

PESO (kg/m)

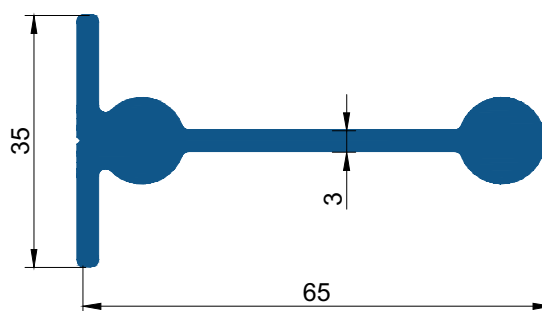
0.207



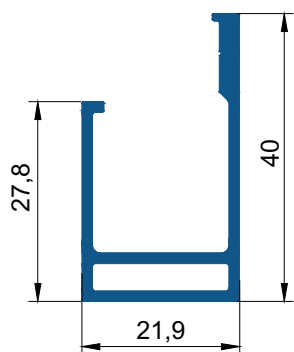
CÓDIGO PESO (kg/m)
WGC-001 1.269



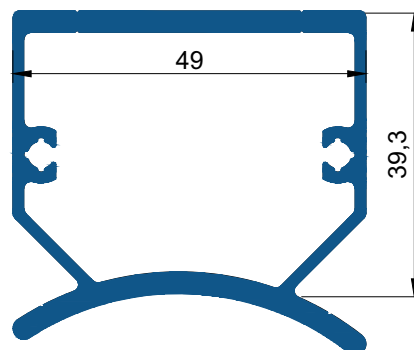
CÓDIGO PESO (kg/m)
WGC-002 1.089



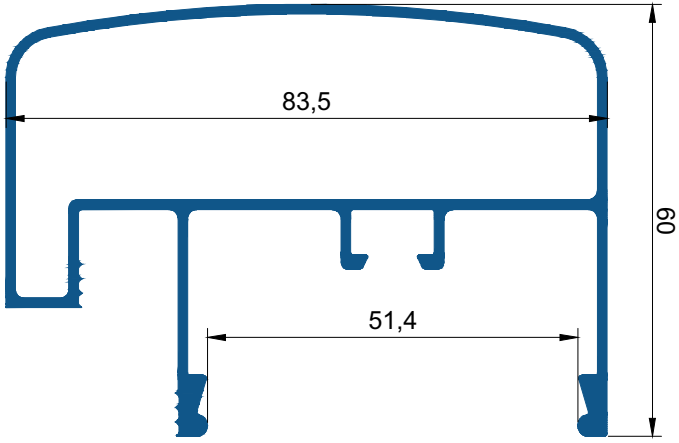
CÓDIGO PESO (kg/m)
WGC-005 1.450



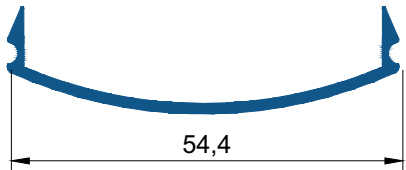
CÓDIGO PESO (kg/m)
WGC-004 0.504



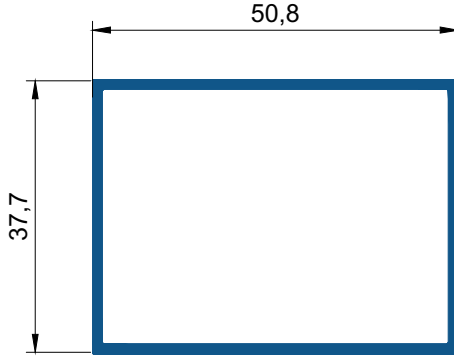
CÓDIGO PESO (kg/m)
WGC-003 1.315



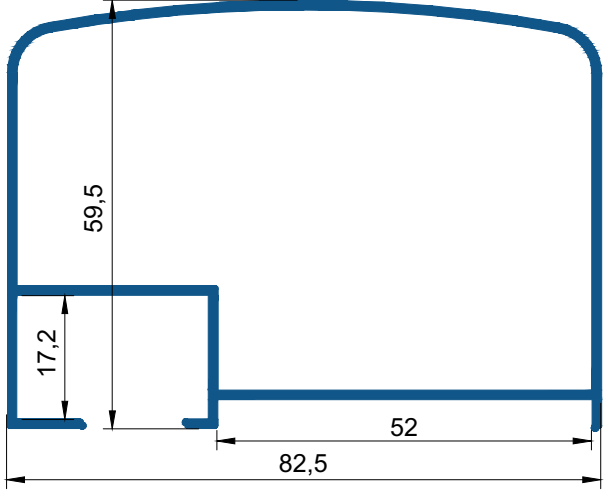
CÓDIGO **WGC-243** PESO (kg/m) **1.403**



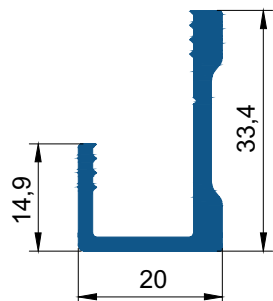
CÓDIGO **WGC-244** PESO (kg/m) **0.274**



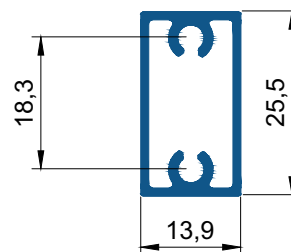
CÓDIGO **AT-0246** PESO (kg/m) **0.686**



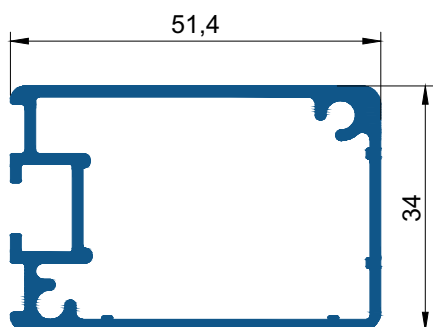
CÓDIGO **WGC-245** PESO (kg/m) **1.247**



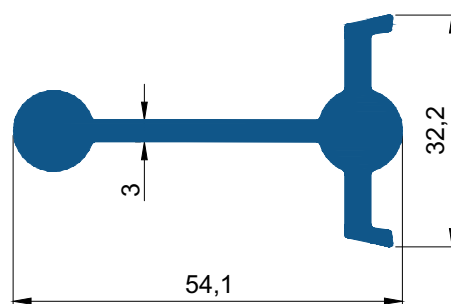
CÓDIGO **WGC-247** PESO (kg/m) **0.521**



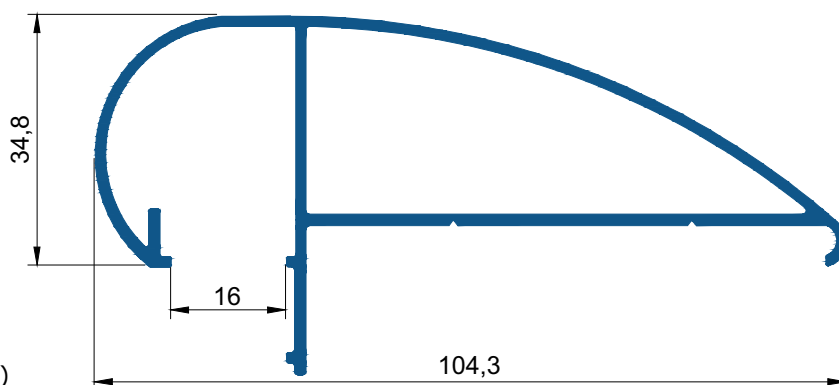
CÓDIGO **WGC-391** PESO (kg/m) **0.329**



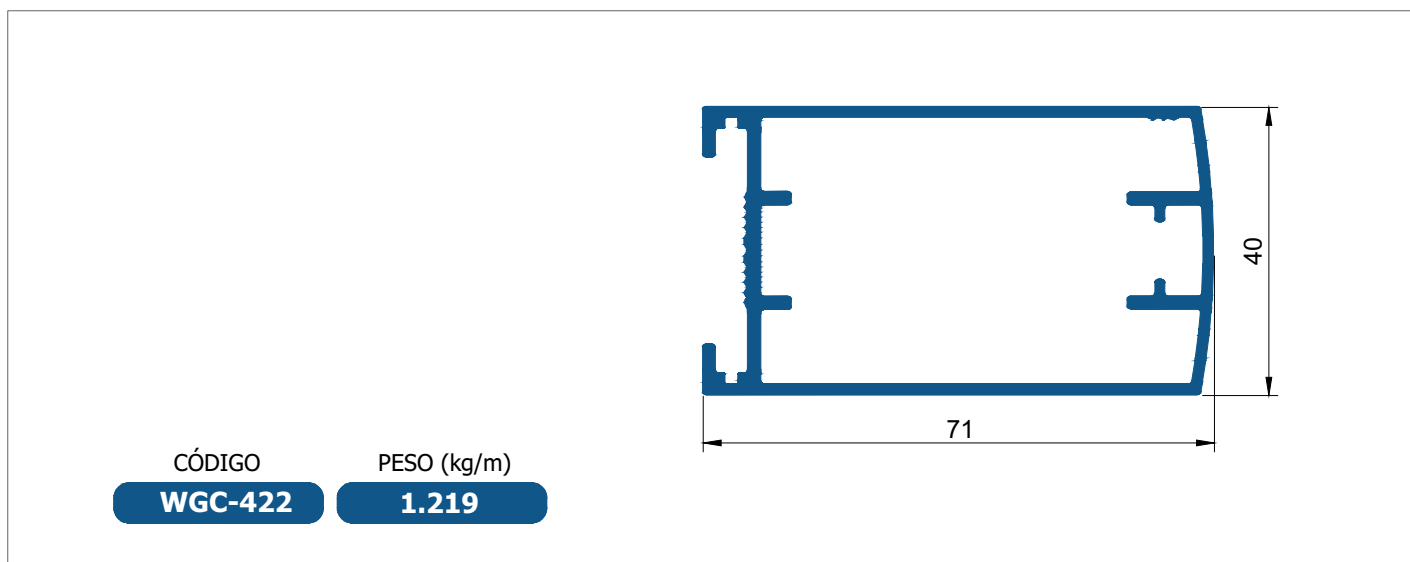
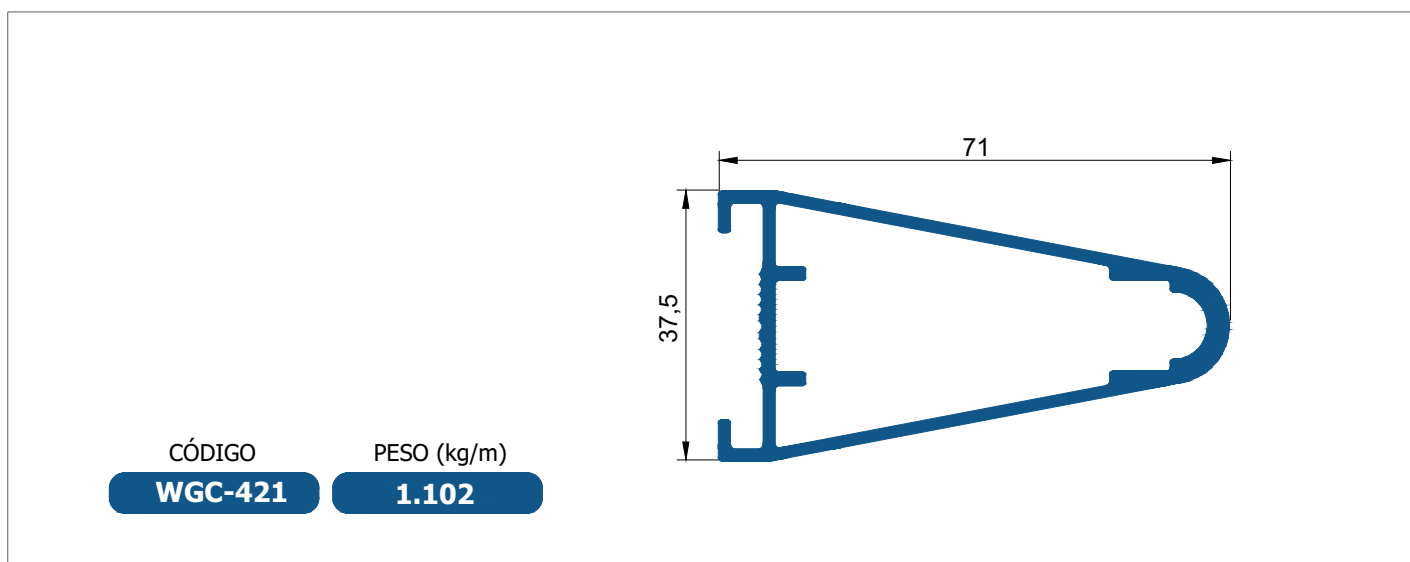
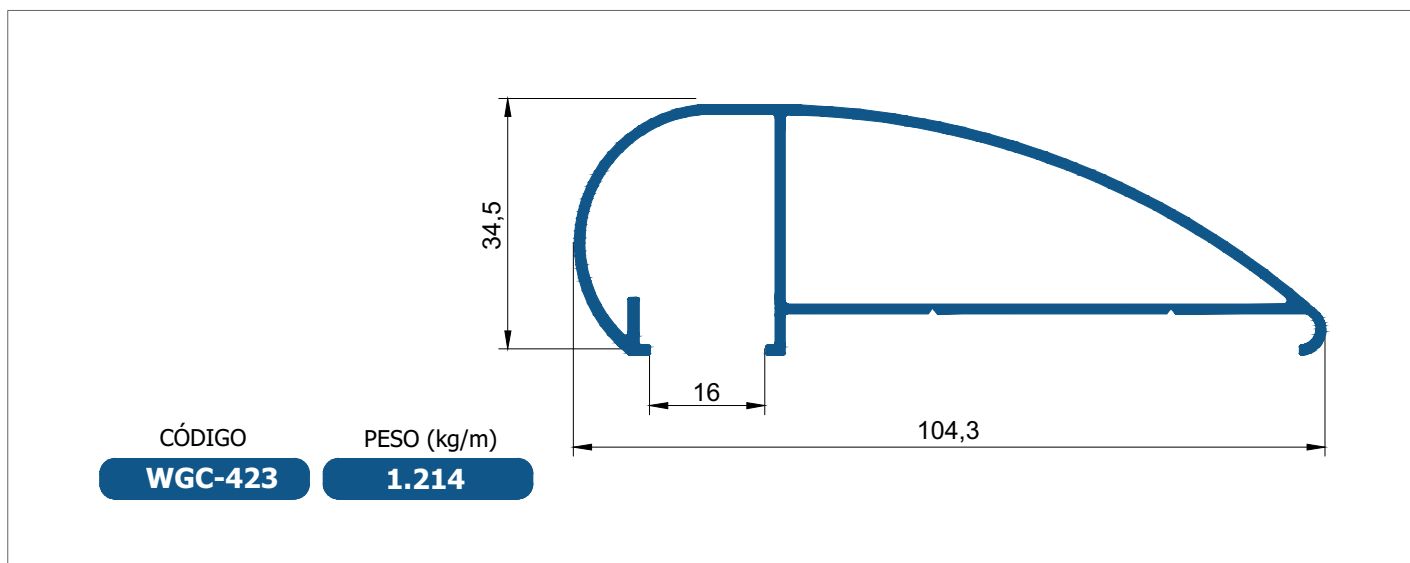
CÓDIGO **WGC-327** PESO (kg/m) **0.859**

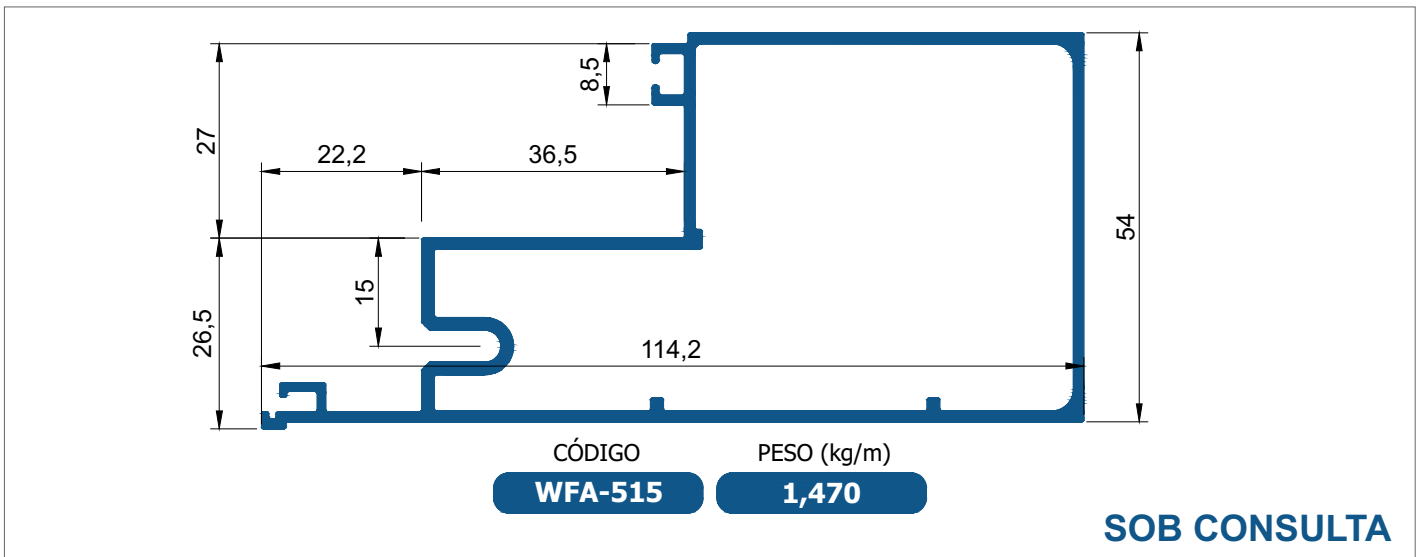
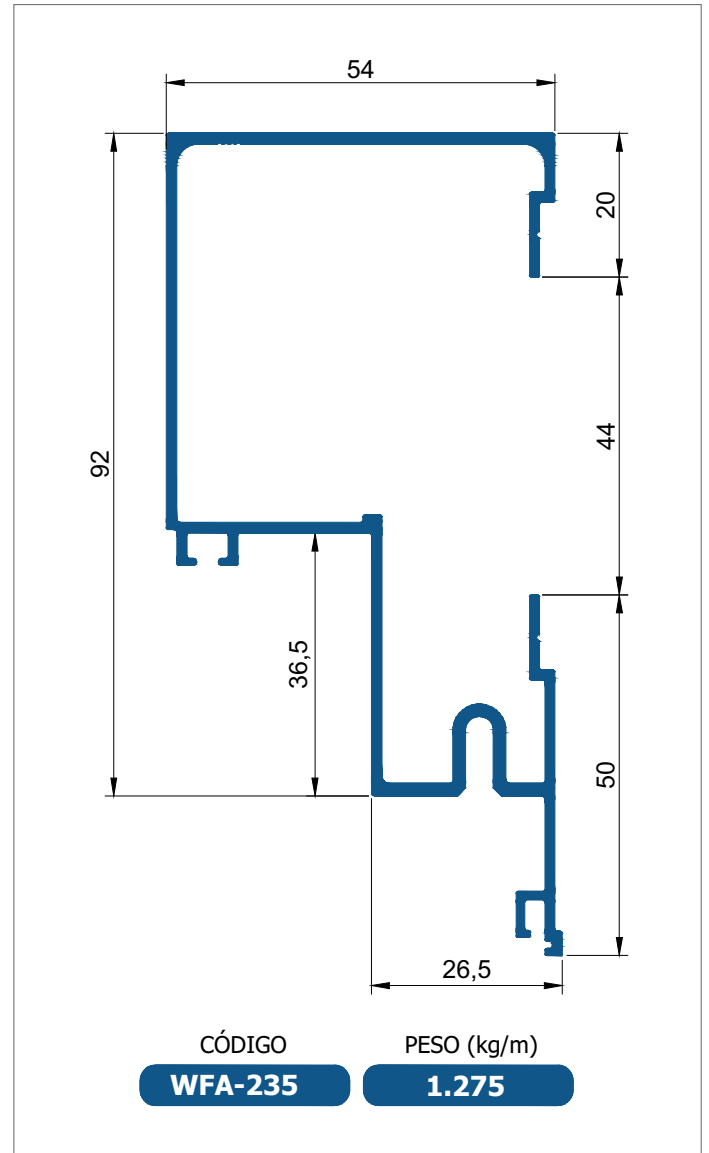
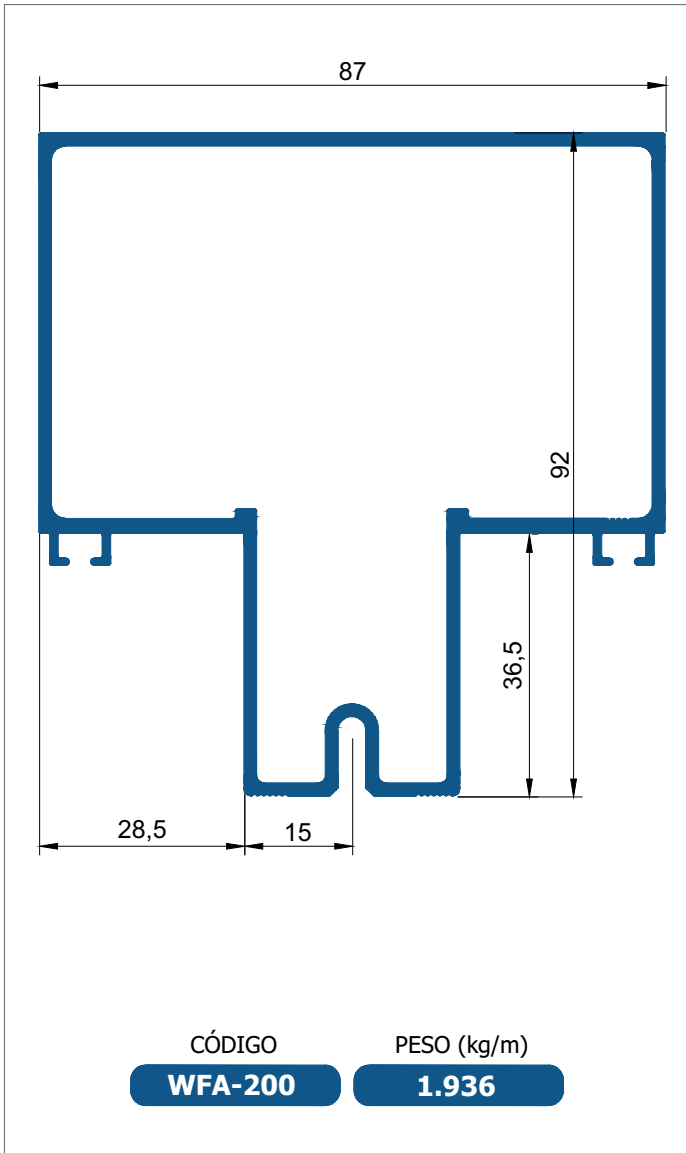


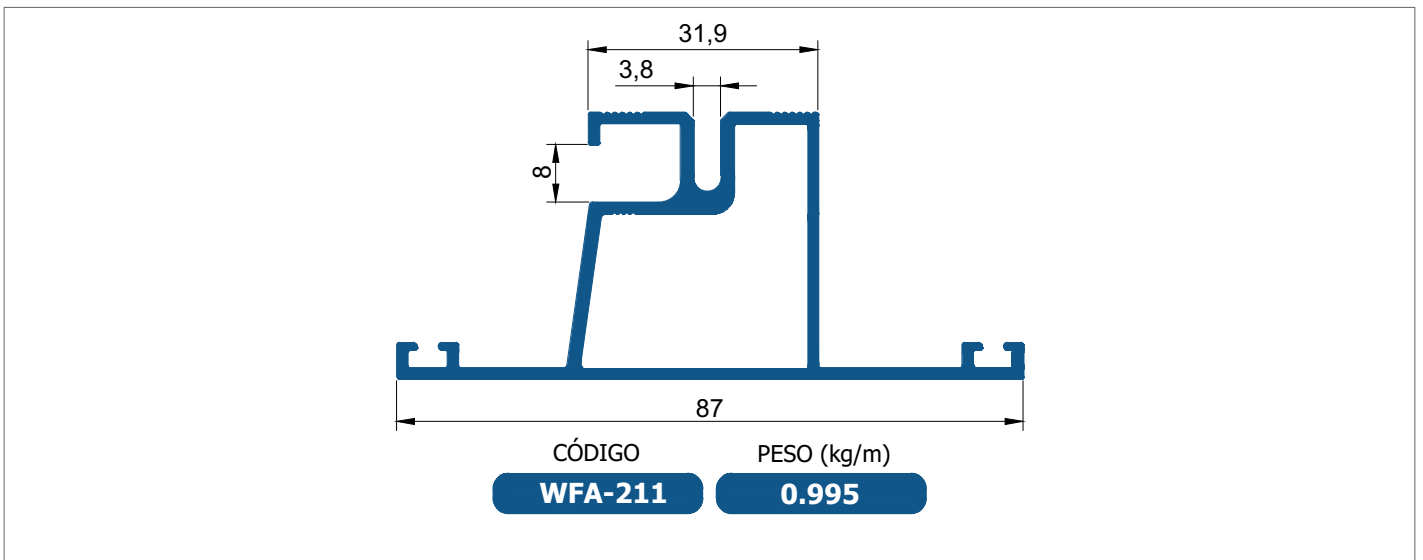
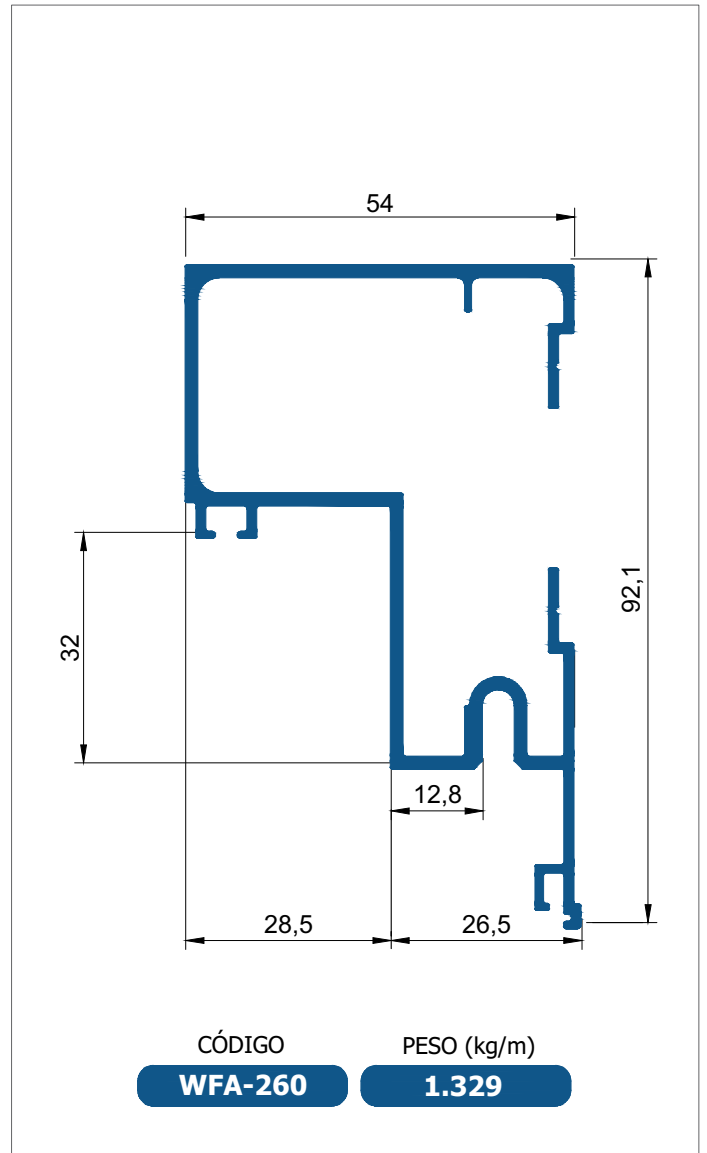
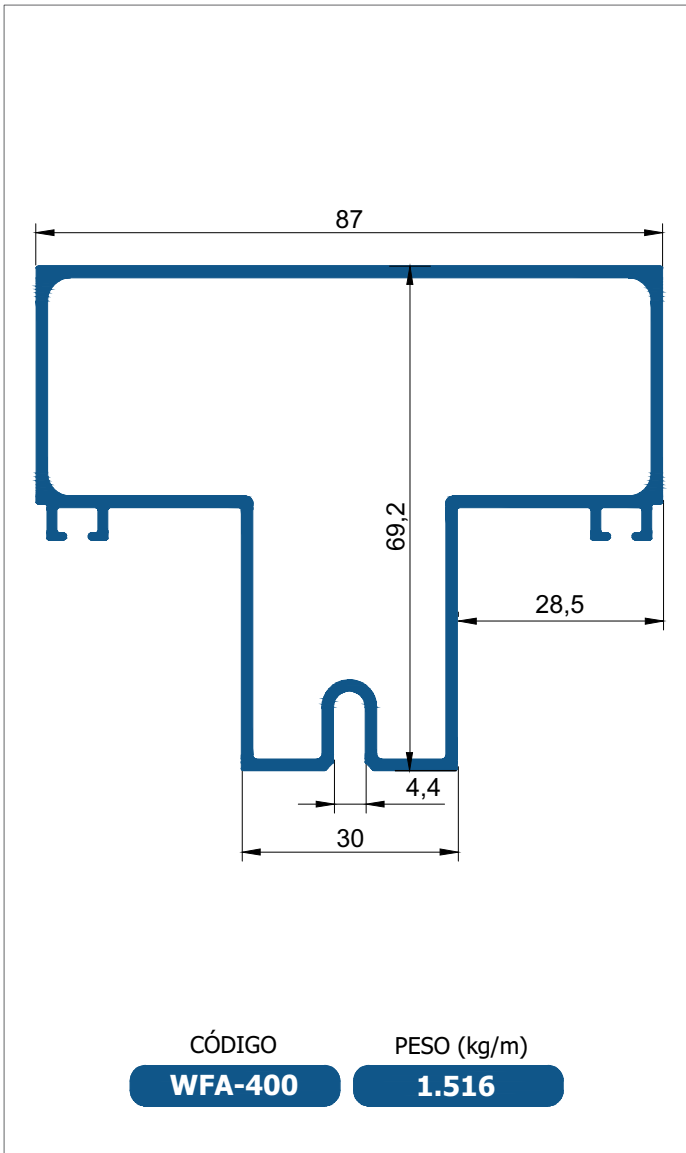
CÓDIGO **WGC-446** PESO (kg/m) **1.101**

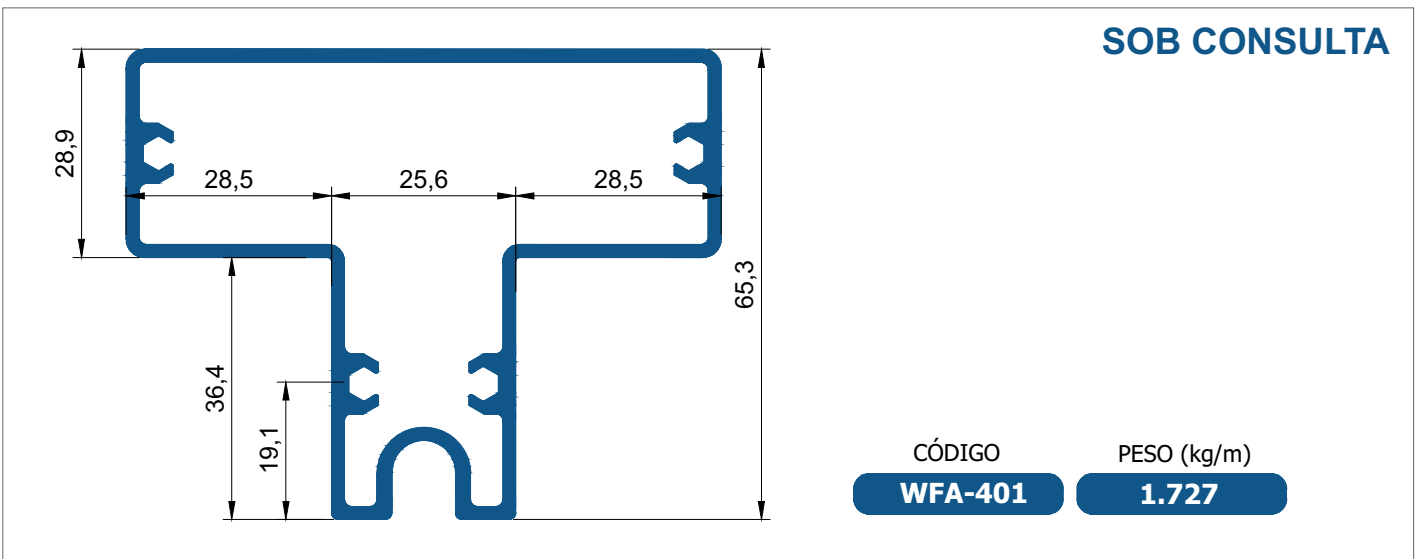
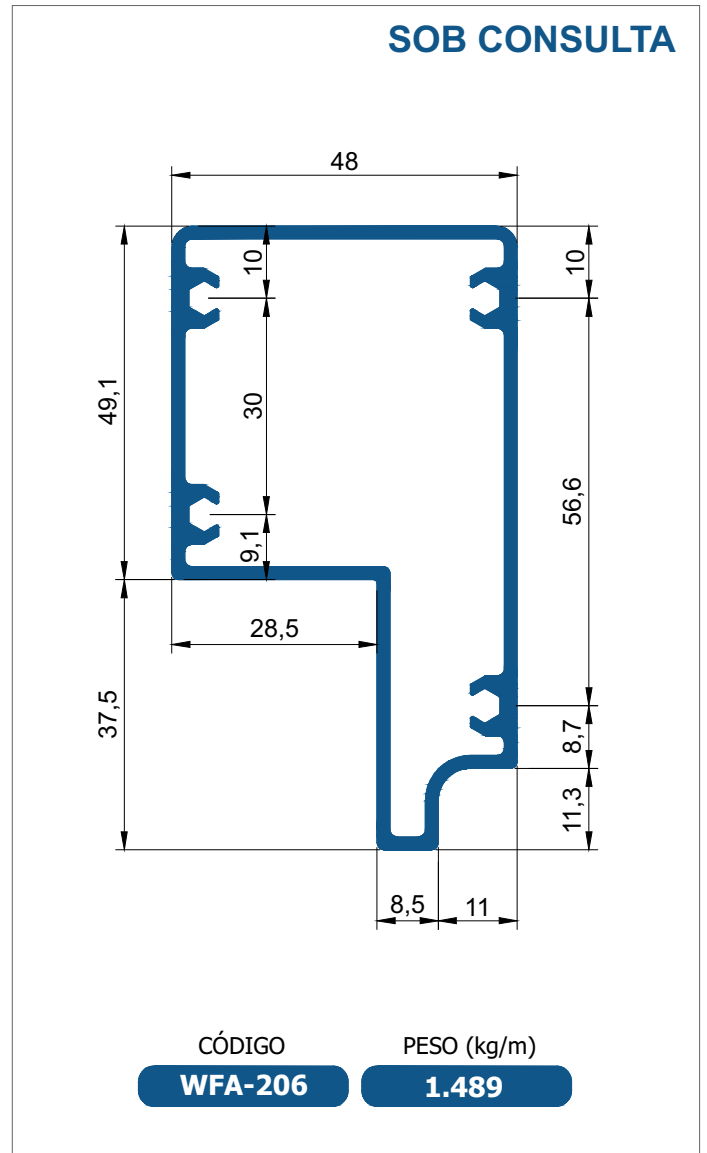
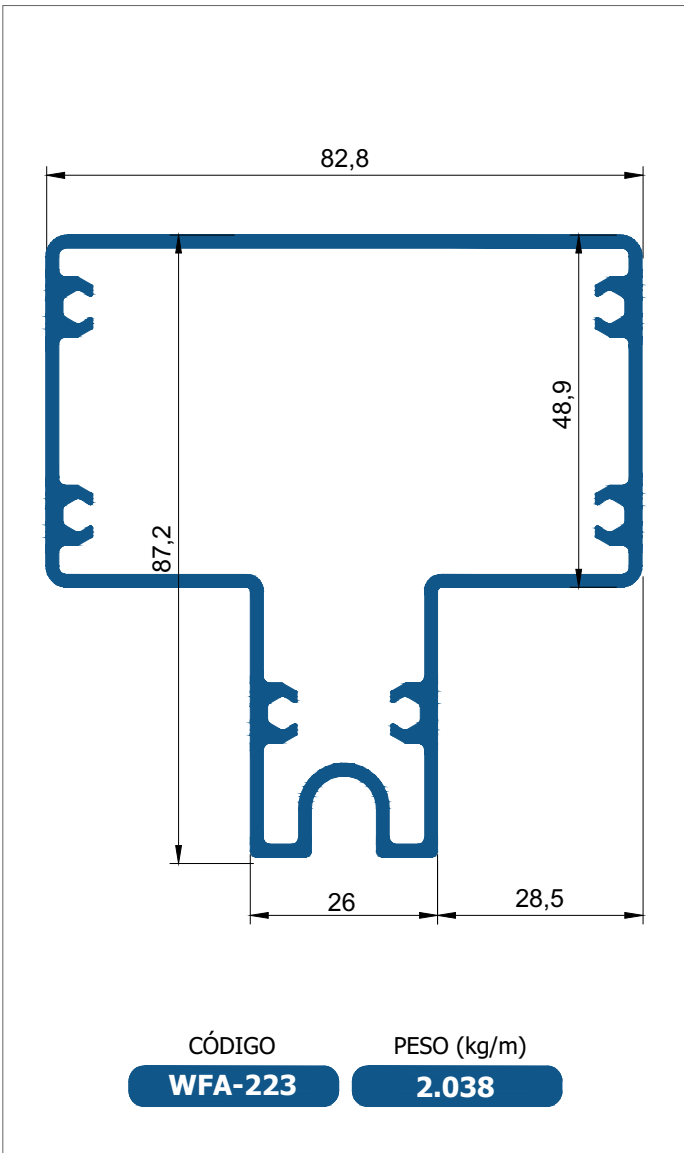


CÓDIGO **WGC-453** PESO (kg/m) **1.154**

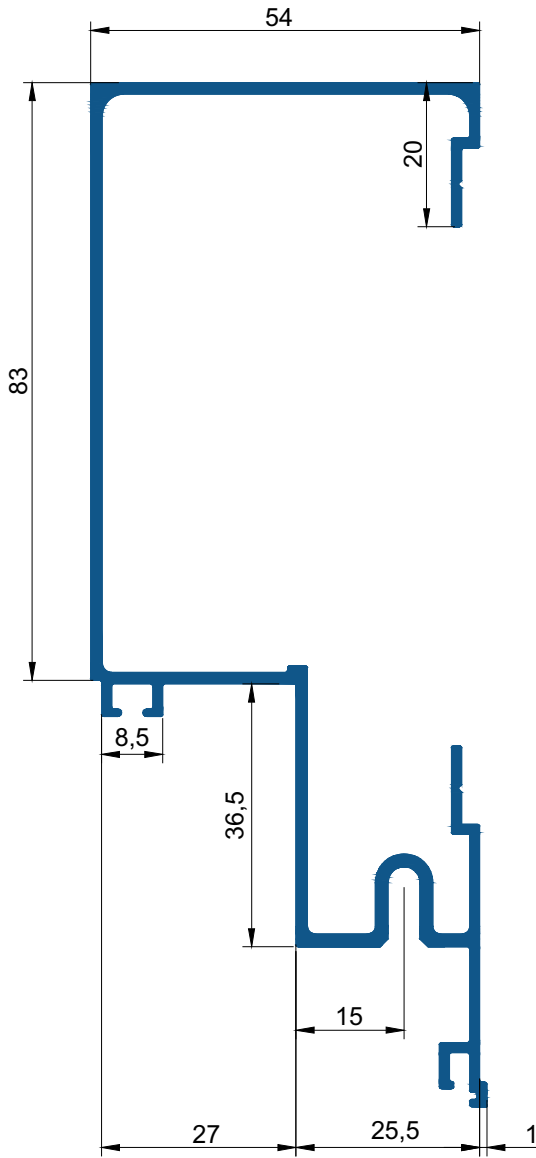






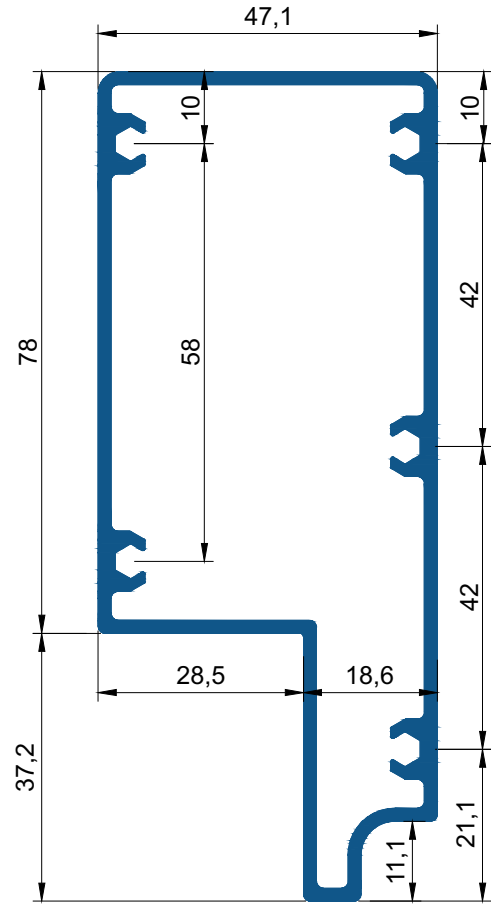


SOB CONSULTA



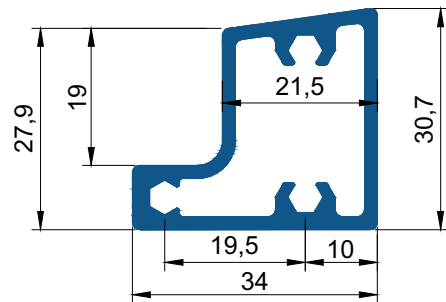
CÓDIGO **WFA-278** PESO (kg/m) **1.453**

SOB CONSULTA

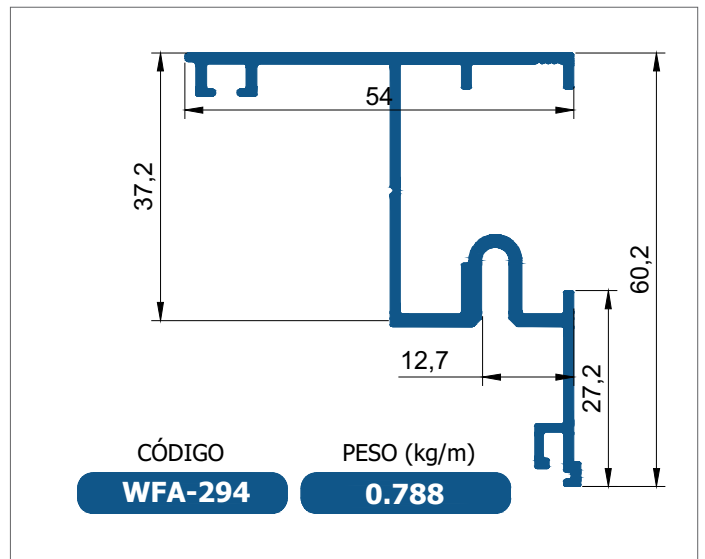
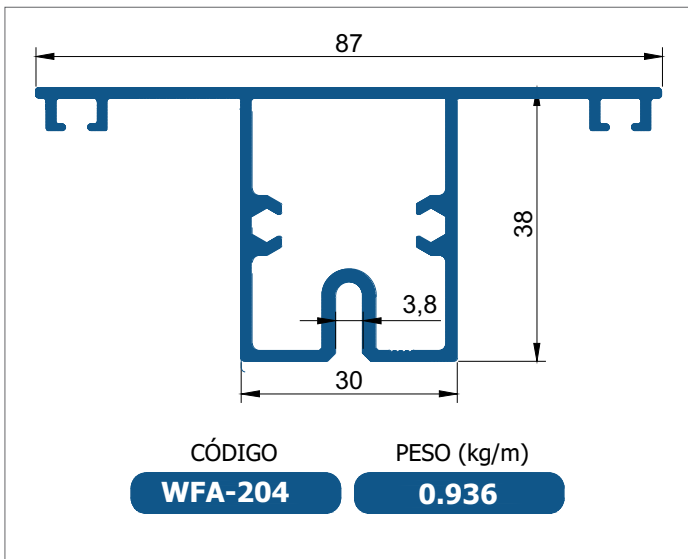
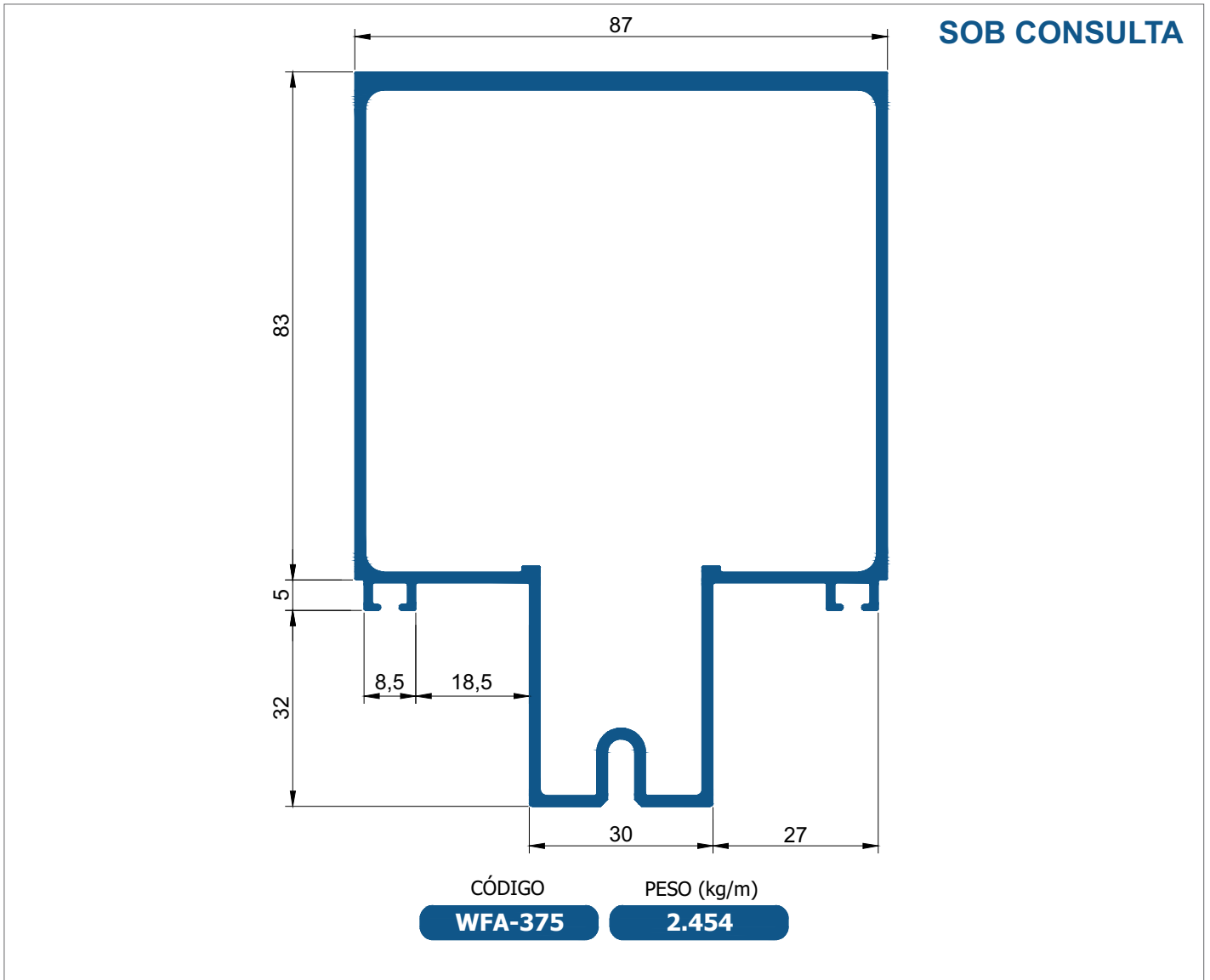


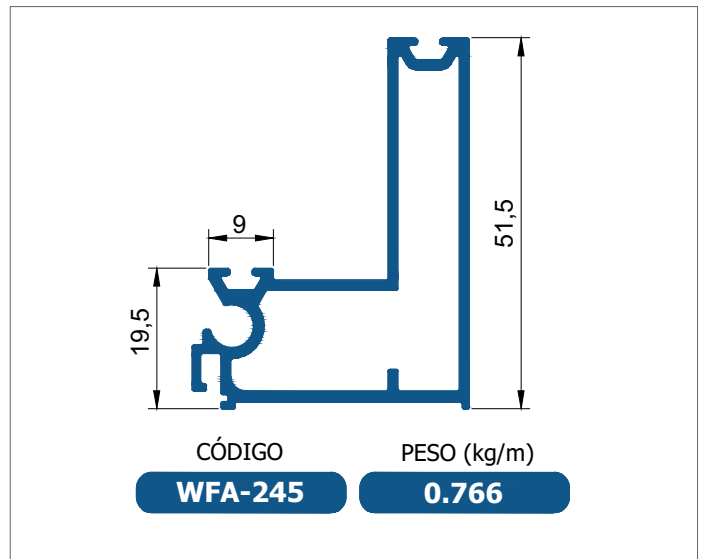
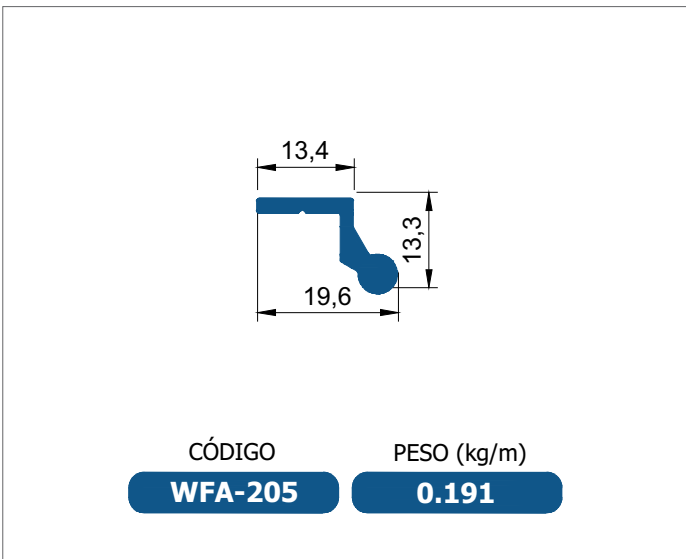
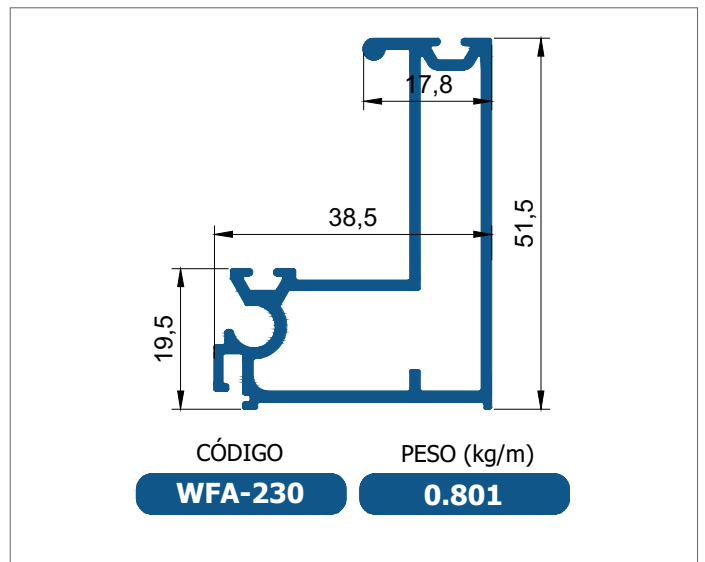
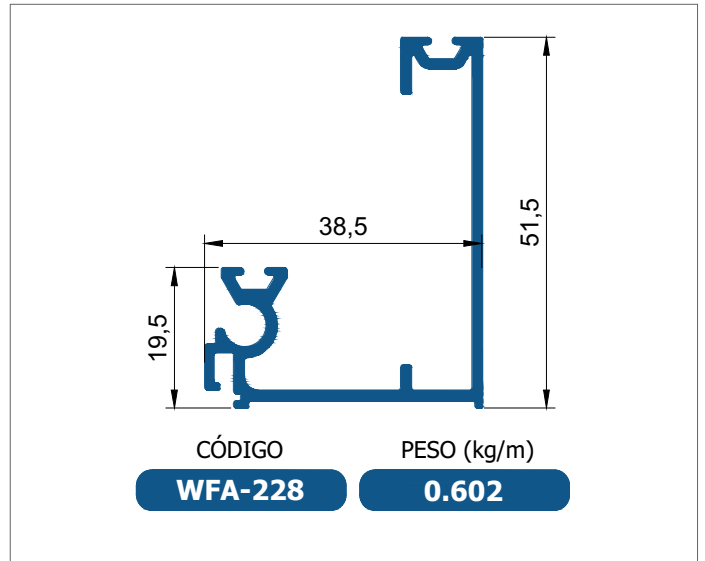
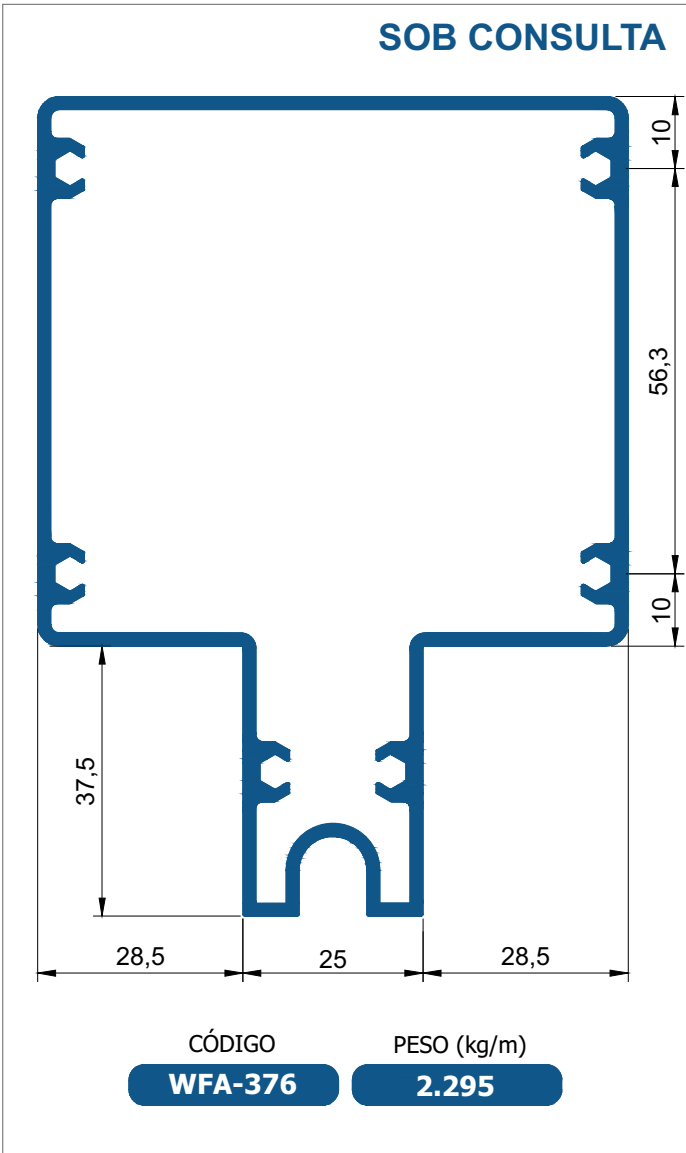
CÓDIGO **WFA-279** PESO (kg/m) **1.826**

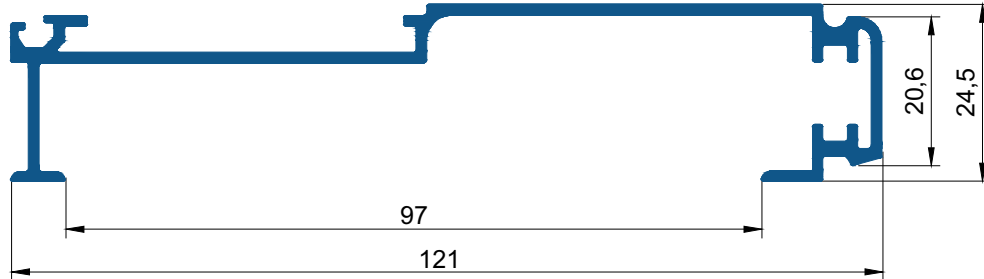
SOB CONSULTA



CÓDIGO **WFA-397** PESO (kg/m) **0.716**





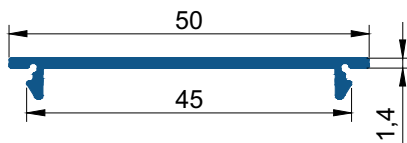


CÓDIGO

WFA-265

PESO (kg/m)

0.907

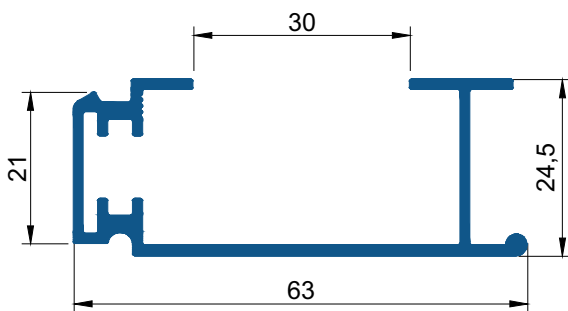


CÓDIGO

WFA-299

PESO (kg/m)

0.221



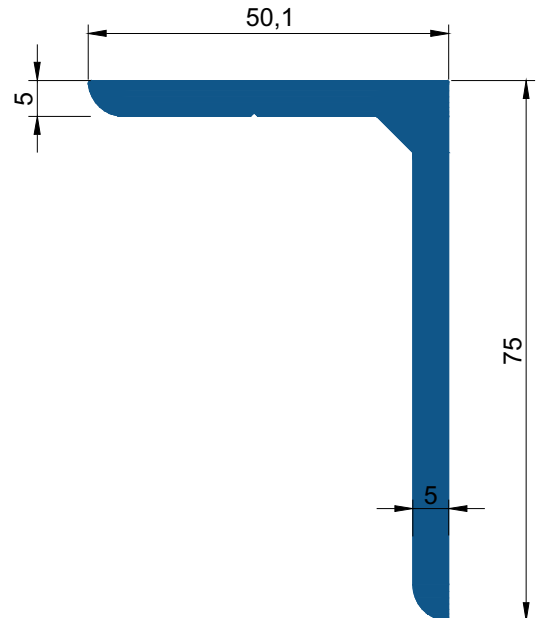
CÓDIGO

WFA-239A

PESO (kg/m)

0.636

SOB CONSULTA



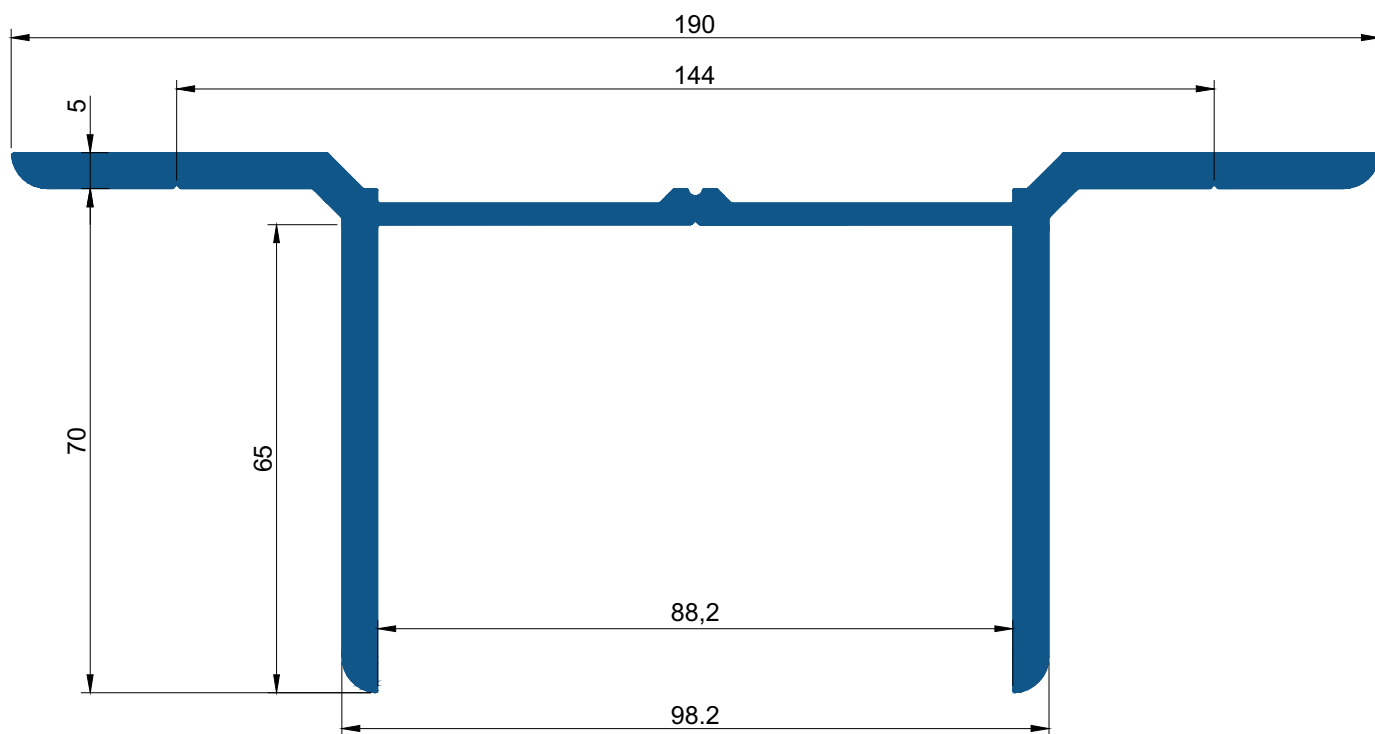
CÓDIGO

WFA-271

PESO (kg/m)

1.626

SOB CONSULTA

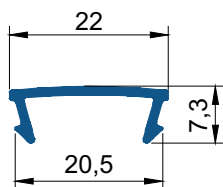


CÓDIGO

WFA-226

PESO (kg/m)

3.892

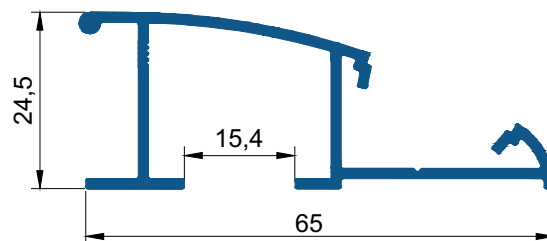


CÓDIGO

WFA-237

PESO (kg/m)

0.121

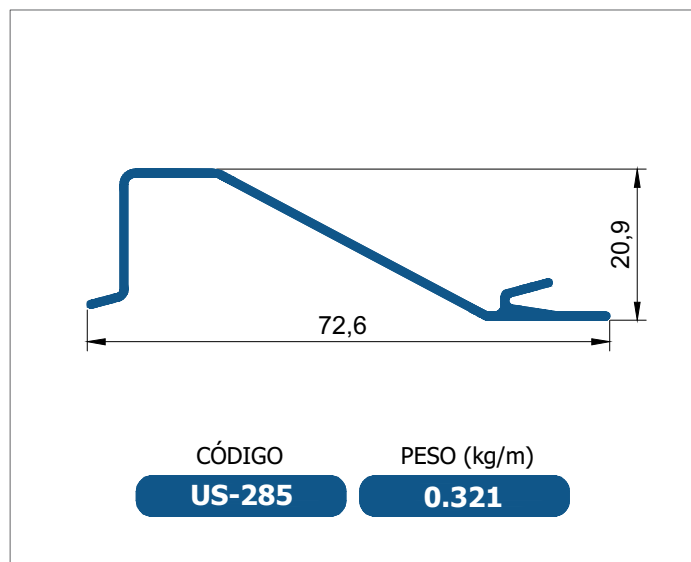
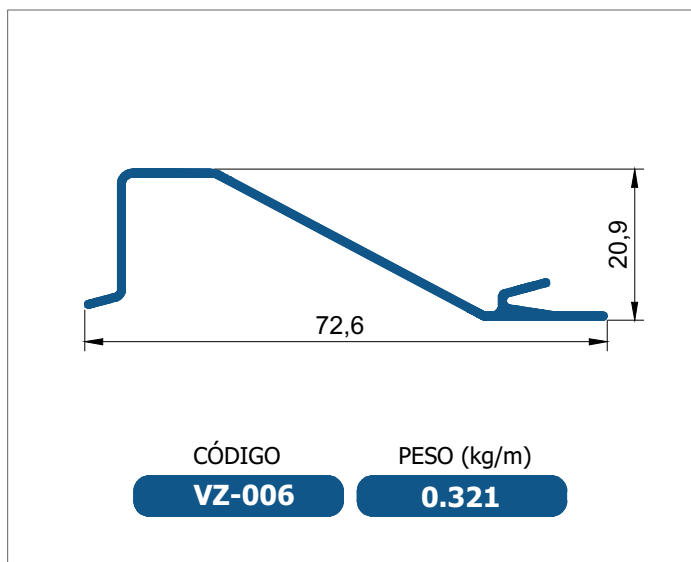
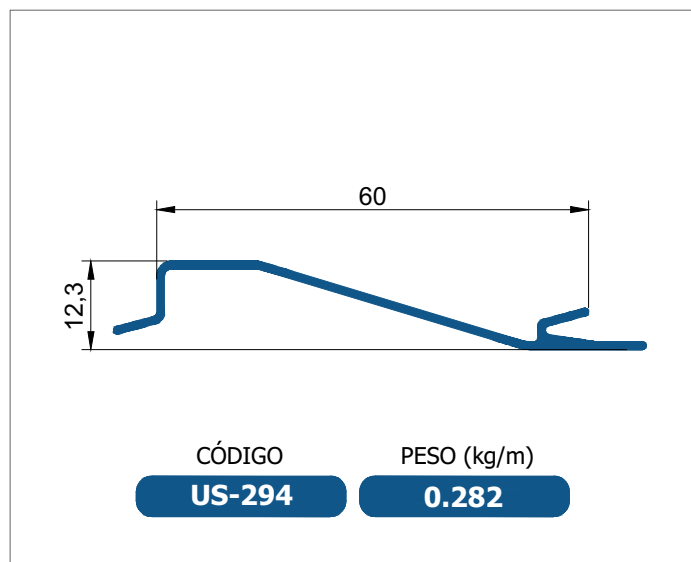
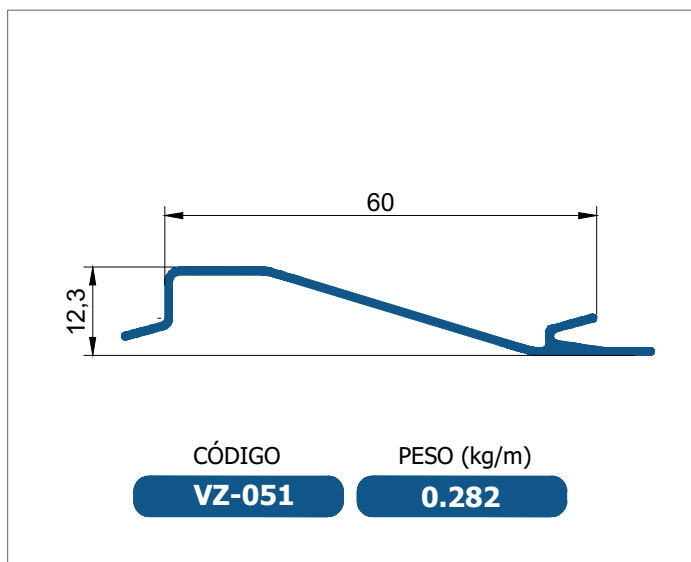
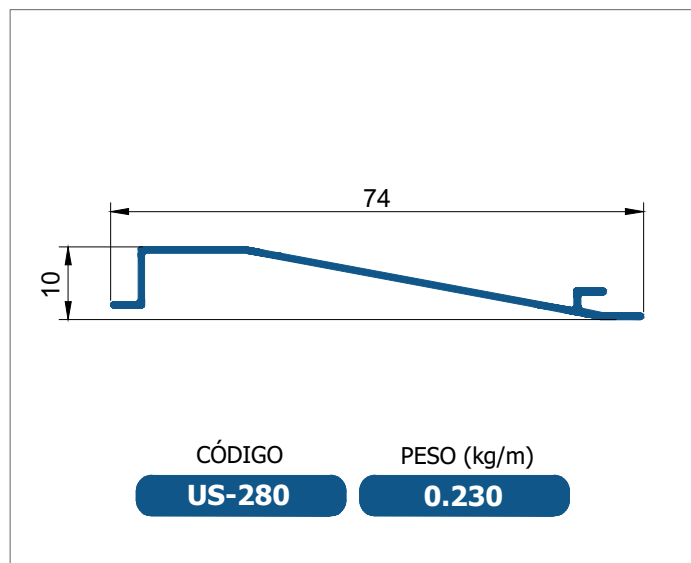
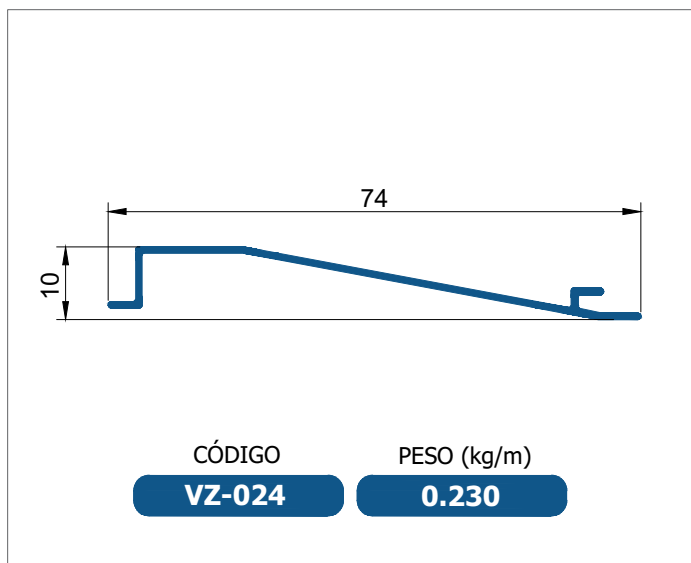


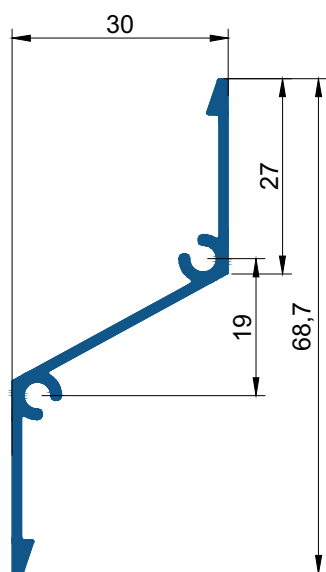
CÓDIGO

WFA-238A

PESO (kg/m)

0.565

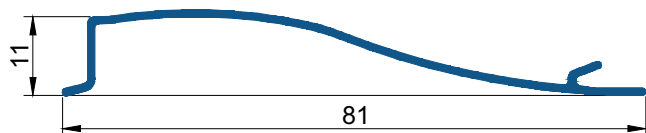




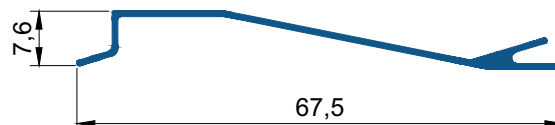
CÓDIGO PESO (kg/m)
VZ-060 0.399



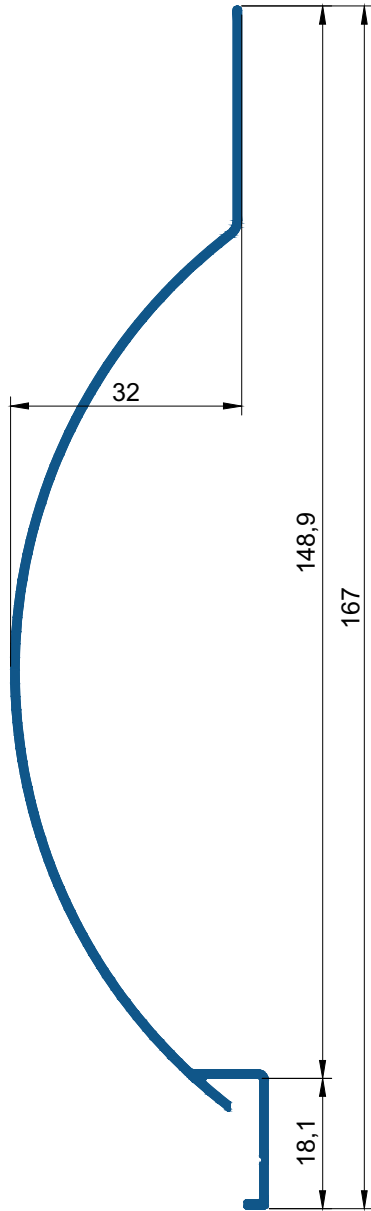
CÓDIGO PESO (kg/m)
VZ-005 0.370



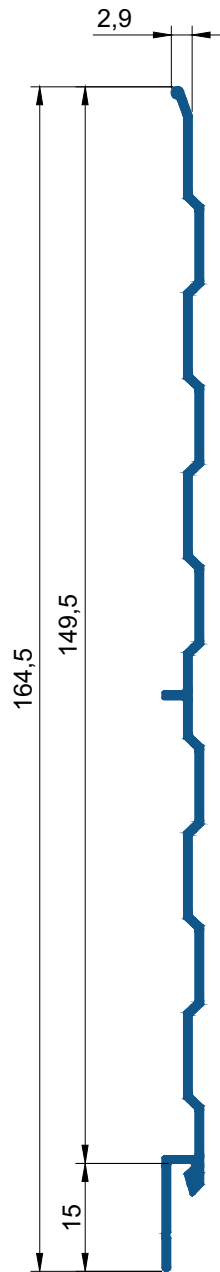
CÓDIGO PESO (kg/m)
VZ-486 0.277



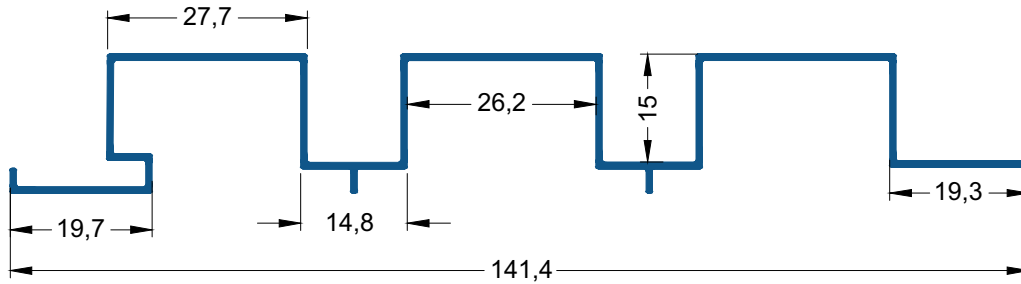
CÓDIGO PESO (kg/m)
VZ-1082 0.199



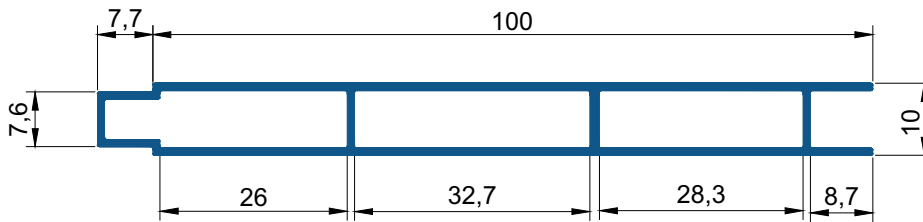
CÓDIGO PESO (kg/m)
WLB-369 **0.668**



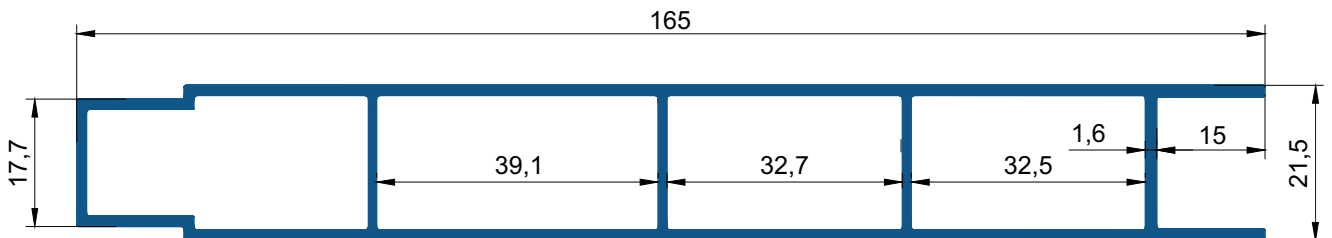
CÓDIGO PESO (kg/m)
WLB-370 **0.624**



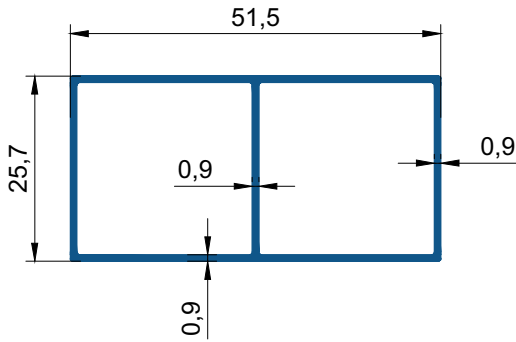
CÓDIGO **WLB-1092** PESO (kg/m) **0.688**



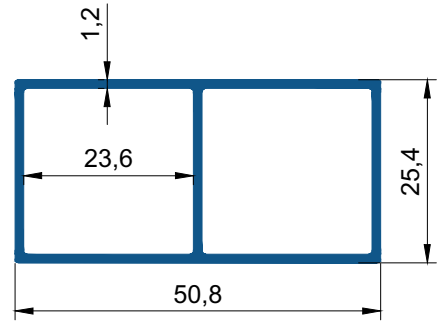
CÓDIGO **WLB-440** PESO (kg/m) **0.711**



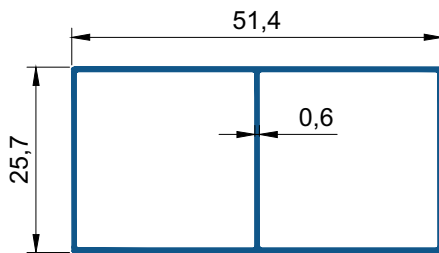
CÓDIGO **WLB-1183** PESO (kg/m) **1.693**



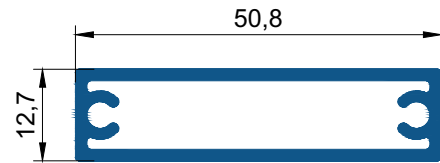
CÓDIGO **AT-0119** PESO (kg/m) **0.453**



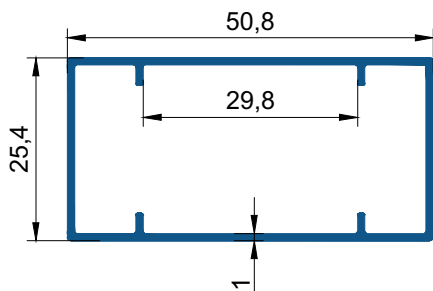
CÓDIGO **AT-0212** PESO (kg/m) **0.583**



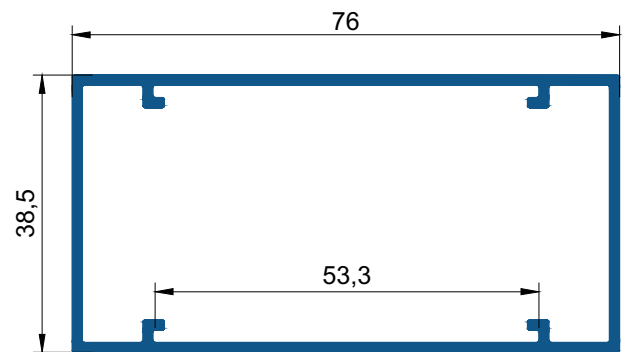
CÓDIGO **AT-0692** PESO (kg/m) **0.306**



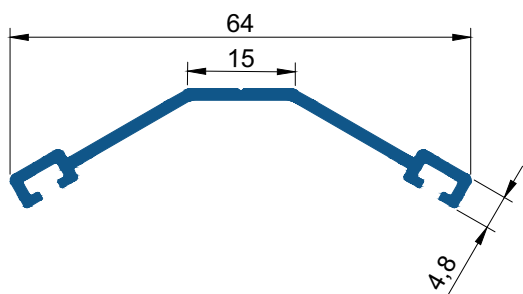
CÓDIGO **AT-0345** PESO (kg/m) **0.631**



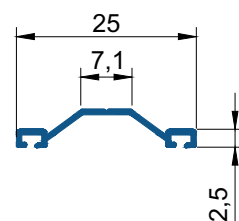
CÓDIGO **AT-0290** PESO (kg/m) **0.454**



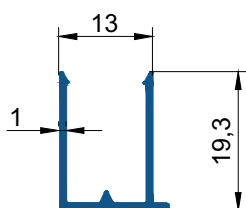
CÓDIGO **AT-1219** PESO (kg/m) **0.965**



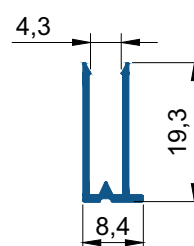
CÓDIGO PESO (kg/m)
AT-0163 0.385



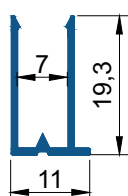
CÓDIGO PESO (kg/m)
AT-0165 0.306



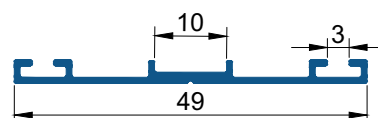
CÓDIGO PESO (kg/m)
AT-0166 0.151



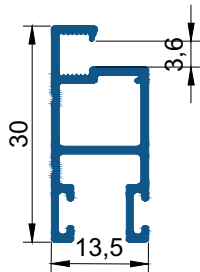
CÓDIGO PESO (kg/m)
AT-0167 0.118



CÓDIGO PESO (kg/m)
AT-0168 0.126

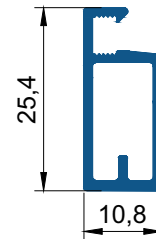


CÓDIGO PESO (kg/m)
AT-0164 0.179



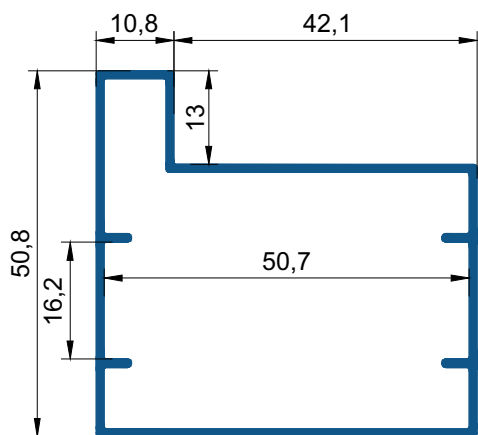
CÓDIGO
AT-0053

PESO (kg/m)
0.296

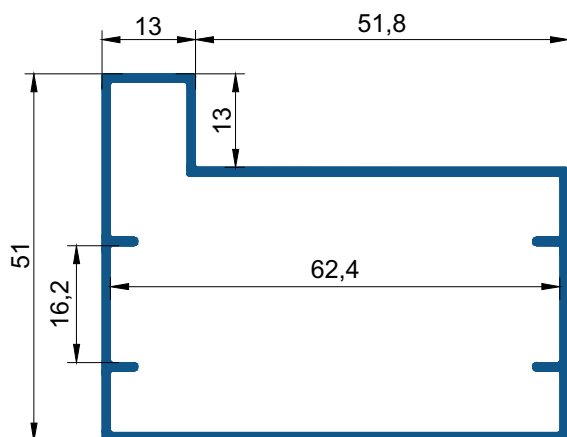


CÓDIGO
AT-0144

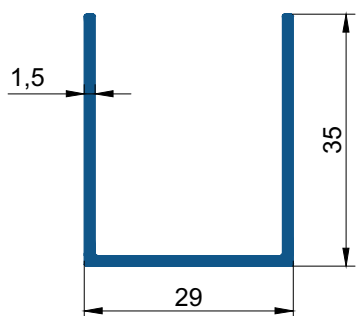
PESO (kg/m)
0.248



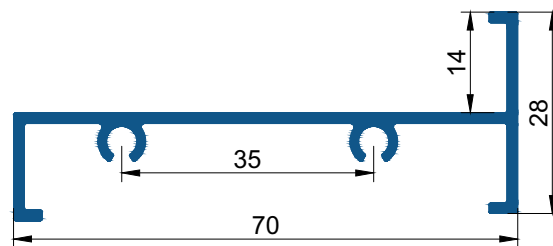
CÓDIGO **AT-0371** PESO (kg/m) **0.685**



CÓDIGO **AT-0372** PESO (kg/m) **0.824**



CÓDIGO **AT-0387** PESO (kg/m) **0.390**



CÓDIGO **AT-0388** PESO (kg/m) **0.577**



INDÚSTRIA E COMÉRCIO DE METAIS

UNIDADE GOIÁS

TELEFONE COMERCIAL: +55 62 3283-4243 / +55 62 3283-6369

WHATSAPP COMERCIAL 01: +55 62 9 9635-5113

WHATSAPP COMERCIAL 02: +55 62 9 9820-3493

WHATSAPP COMERCIAL 03: +55 62 9 9701-6977

RUA PARACANÃS QD.3 - LTS. 12 A 15

JARDIM ELDORADO - DIMAG

APARECIDA DE GOIÂNIA - GO

UNIDADE SÃO PAULO

CONTATO: +55 18 3203-0264

E-MAIL: contato@windor.ind.br

AV. JOAQUIM CONSTANTINO, 4766.

JARDIM CAMBUI

PRES. PRUDENTE - SP

WWW.WINDOR.IND.BR