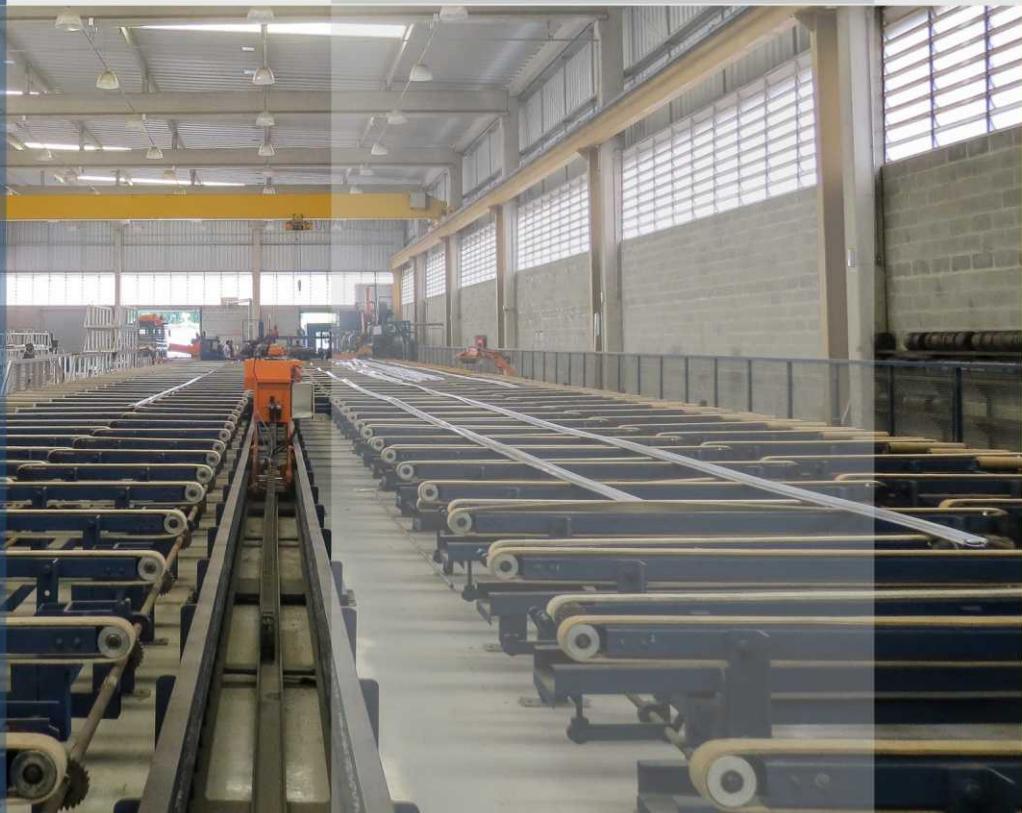


Versão 1.1
Junho 2018



PERFIS DE ALUMÍNIO



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CATÁLOGO DE FERRAMENTAS

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CARACTERÍSTICAS ESPECÍFICAS									
Liga	Resistência a corrosão	Anodização		Solda		Usabilidade	Deformabilidade	Brasagem	Outras
		Decorativa	Protetiva	MIG	TIG				
1050	A	A	A	A	E	A	A	A	-
2011	C	E	B	N	N	A	C	N	Solda por resistência
3003	A	D	B	A	A	D	A	A	-
6005A	A	C	A	A	A	C	C	B	-
6060	A	A	A	A	A	C	C	A	-
6063	A	A	A	A	A	D	B	A	-
6061	A	D	A	A	A	C	B	B	-
6082	A	D	A	A	A	C	C	C	-
6101	A	A	A	A	A	D	B	A	-
6261	A	C	A	A	A	C	B	B	-
6262	B	C	A	A	A	A	C	A	-
6351	A	D	A	A	A	C	C	C	-
6463	A	A	A	A	A	D	B	A	-
7075	C	E	B	N	N	B	D	N	Solda por resistência

PROPRIEDADES FÍSICAS ESPECÍFICAS								
Liga	Peso específico (g/cm³)	Modulo de elasticidad e (Mpa)	Modulo de rigidez (Mpa)	Temperatura de fusão (°C)	Calor específico entre 0-100°C (Cal/g°C)	Coeficiente de expansão linear (L/°C)	Condutibilidade térmica a 25°C (Cal/cm²°C)	Condutibilidade elétrica (%IACS)
1050	2,70	70000	26500	650-660	0,22	24 x 10-6	0,50	60
2011	2,82	72500	27500	535-645	0,23	23 x 10-6	0,37	40
3003	2,73	70000	26500	640-655	0,22	23 x 10-6	0,38	43
6005A	2,71	70000	26000	570-655	0,22	23 x 10-6	0,44	48
6060	2,71	70000	26500	600-650	0,21	23 x 10-6	0,48	52
6063	2,71	70000	26500	600-650	0,21	23 x 10-6	0,48	52
6061	2,71	70000	26500	580-650	0,22	24 x 10-6	0,37	43
6082	2,71	70000	26500	555-650	0,21	24 x 10-6	0,44	46
6101	2,71	70000	26500	605-655	0,22	23 x 10-6	0,49	55
6261	2,71	70000	26000	570-655	0,22	23 x 10-6	0,44	48
6262	2,71	70000	26700	582-652	0,21	23 x 10-6	0,37	44
6351	2,71	70000	26500	555-650	0,21	24 x 10-6	0,44	46
6463	2,71	70000	26500	600-650	0,21	23 x 10-6	0,48	52
7075	2,80	73000	27500	475-630	0,23	24 x 10-6	0,29	30

PROPRIEDADES FÍSICAS ESPECÍFICAS			
Propriedades Físicas		Alumínio	Aço
Peso específico (g/cm³)		2,71	7,86
Temperatura de fusão (°C)		655	1500
Módulo de elasticidade (Mpa)		69000	205940
Coeficiente de expansão linear (L/°C)		23 x 10-6	11,7 x 10-6
Condutibilidade térmica a 25°C (Cal/cm²°C)		0,56	0,12
Condutibilidade elétrica (%IACS)		62	14,5
		100	

LIMITES DE COMPOSIÇÃO QUÍMICA, em porcentagem (1)													Alumínio Mínimo	
Liga	Si	Fe	Cu	Mn	Mg	Cr	Zn	V	Ti	Pb	Bi	Outros		
												Cada	Total	
1050	0,25	0,40	0,05	0,05	0,05	-	0,05	0,05	0,03			0,03	-	99,50 (2)
2011	0,40	0,70	5,0 - 6,0	-	-	-	0,30	0,05 - 0,15	-	0,20 - 0,60	0,20 - 0,60	0,05	0,15	Restante
3003	0,60	0,70	0,05 - 0,20	1,0 - 1,5	-	-	0,10	-	-	-	-	0,05	0,15	Restante
6005A	0,50 - 0,90	0,35	0,30	0,50	0,40 - 0,70	0,30	0,20	-	0,10			0,05	0,15	Restante
6060	0,30 - 0,60	0,10 - 0,30	0,10	0,10	0,35 - 0,60	0,05	0,15	-	0,10	-	-	0,05	0,15	Restante
6063	0,20 - 0,60	0,35	0,10	0,10	0,45 - 0,90	0,10	0,10	-	0,10	-	-	0,05	0,15	Restante
6061	0,40 - 0,80	0,7	0,15 - 0,40	0,15	0,80 - 1,20	0,04 - 0,35	0,25	-	0,15	-	-	0,05	0,15	Restante
6082	0,70 - 1,30	0,50	0,10	0,40 - 1,00	0,60 - 1,20	0,25	0,20	-	0,10	-	-	0,05	0,15	Restante
6101	0,30 - 0,70	0,50	0,10	0,03	0,35 - 0,80	0,03	0,10	-	-	-	-	0,03	0,10	Restante
6261	0,40 - 0,70	0,40	0,15 - 0,40	0,20 - 0,35	0,70 - 1,00	0,10	0,20	-	0,10	-	-	0,05	0,15	Restante
6262	0,40 - 0,80	0,70	0,15 - 0,40	0,15	0,80 - 1,20	0,04 - 0,14	0,25	-	0,15	0,40 - 0,70	0,40 - 0,70	0,05	0,15	Restante
6351	0,70 - 1,30	0,50	0,10	0,40 - 0,80	0,40 - 0,80	-	0,20	-	0,20	-	-	0,05	0,15	Restante
6463	0,20 - 0,60	0,15	0,20	0,05	0,45 - 0,90	-	0,05	-	-	-	-	0,05	0,15	Restante
7075	0,40	0,50	1,2 - 2,00	0,30	2,10 - 2,90	0,18 - 0,28	5,10 - 6,10	-	0,20	-	-	0,05	0,15	Restante

1) A composição é dada em porcentagem maxima, a menos que indicada como faixa ou minimo

2) O conteudo de alumínio é a diferença entre 100,00% e a soma de todos os outros elementos metálicos presentes, em quantidade de 0,010% ou mais cada um, arredondados para a segunda casa decimal antes de se processar a soma.

TOLERÂNCIAS DIMENSIONAIS

As tolerâncias dimensionais dos produtos extrudados estão baseadas na ABNT NBR 8116 - Alumínio e suas ligas - Tolerâncias dimensionais de produtos extrudados

Tolerâncias dimensionais nas seções transversais																	
Tolerâncias para mais e para menos																	
Dimensão Nominal (mm)		Dimensões do Metal			Dimensões entre superfície metálica												
		Desvio permitível da dimensão nominal, onde 75% ou mais é meta			Desvio permitível da dimensão nominal, quando mais de 25% de dimensão for vazio												
		Todas as dimensões, exceto aquelas incluídas na coluna 3		Espessura de parede. Circundando um vazio de 70 mm ou		De 5 a 15		De 15 a 30		De 30 a 60		De 60 a 100		De 100 a 150		De 150 a 200	
Coluna 1		Coluna 2		Coluna 3		Coluna 4		Coluna 5		Coluna 6		Coluna 7		Coluna 8		Coluna 9	
Acima de	Até	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX cor Mg >_ 4,0%	Outras Ligas	Ligas 5XXX com Mg >_ 4,0%	Outras Ligas	Ligas 5XXX com Mg >_ 4,0%	Outras Ligas
Diâmetro do círculo circunscrito até 250 mm, inclusive																	
-	3,20	0,23	0,15	$\pm 15\%$ de dimensão nominal (± 0,58)	$\pm 10\%$ de dimensão nominal (± 0,46)	0,33	0,25	0,38	0,30	-	-	-	-	-	-	-	-
3,20	6,30	0,28	0,18			0,41	0,30	0,46	0,36	0,50	0,41	-	-	-	-	-	-
6,30	12,50	0,30	0,20	$\pm 15\%$ de dimensão nominal (± 0,52)	$\pm 10\%$ de dimensão nominal (± 0,41)	0,48	0,36	0,50	0,41	0,56	0,46	0,60	0,50	-	-	-	-
12,50	20,00	0,36	0,23			0,52	0,41	0,58	0,46	0,64	0,50	0,70	0,56	-	-	-	-
20,00	25,00	0,38	0,25	$\pm 15\%$ de dimensão nominal (± 0,58)	$\pm 10\%$ de dimensão nominal (± 0,46)	0,58	0,46	0,64	0,50	0,70	0,56	0,76	0,64	0,88	0,76	-	-
25,00	40,00	0,46	0,30			0,68	0,54	0,74	0,58	0,80	0,66	0,92	0,76	1,05	0,88	-	-
40,00	50,00	0,54	0,36	$\pm 15\%$ de dimensão nominal (± 0,78)	$\pm 10\%$ de dimensão nominal (± 0,60)	0,78	0,60	0,84	0,66	0,96	0,78	1,10	0,92	1,25	1,05	1,45	1,25
50,00	100,00	0,90	0,60			1,15	0,86	1,25	0,96	1,50	1,20	1,75	1,45	2,05	1,70	2,35	2,05
100,00	150,00	1,30	0,86	$\pm 15\%$ de dimensão nominal (± 1,55)	$\pm 10\%$ de dimensão nominal (± 1,10)	1,55	1,10	1,70	1,25	2,05	1,65	2,40	2,00	2,80	2,40	3,25	2,80
150,00	200,00	1,70	1,10			1,95	1,35	2,15	1,55	2,65	2,40	3,05	2,50	3,60	3,05	4,10	3,55
200,00	250,00	2,05	1,35	$\pm 15\%$ de dimensão nominal (± 2,30)	$\pm 10\%$ de dimensão nominal (± 1,65)	2,30	1,65	2,55	1,90	3,25	2,50	3,75	3,05	4,60	3,70	5,00	4,30
Diâmetro do círculo circunscrito acima de 250 mm																	
-	3,20	0,54	0,36	$\pm 15\%$ de dimensão nominal (± 0,64)	$\pm 10\%$ de dimensão nominal (± 0,46)	0,64	0,46	0,68	0,50	-	-	-	-	-	-	-	-
3,20	6,30	0,56	0,38			0,66	0,48	0,74	0,56	0,88	0,72	-	-	-	-	-	-
6,30	12,50	0,60	0,41	$\pm 15\%$ de dimensão nominal (± 0,72)	$\pm 10\%$ de dimensão nominal (± 0,50)	0,72	0,50	0,80	0,60	0,96	0,76	1,45	1,25	-	-	-	-
12,50	20,00	0,64	0,43			0,76	0,56	0,88	0,68	1,25	1,00	1,75	1,50	-	-	-	-
20,00	25,00	0,68	0,46	$\pm 15\%$ de dimensão nominal (± 0,78)	$\pm 10\%$ de dimensão nominal (± 0,58)	0,78	0,58	1,00	0,76	1,45	1,25	2,00	1,80	2,50	2,30	-	-
25,00	40,00	0,72	0,48			0,84	0,60	1,10	0,86	1,75	1,50	2,25	2,05	2,75	2,55	-	-
40,00	50,00	0,92	0,60	$\pm 15\%$ de dimensão nominal (± 1,15)	$\pm 10\%$ de dimensão nominal (± 0,86)	1,15	0,86	1,40	1,10	2,10	1,80	2,60	2,30	3,10	2,80	4,60	4,30
50,00	100,00	1,30	0,86			1,55	1,10	1,80	1,35	2,45	2,05	2,95	2,55	3,50	3,05	5,00	4,55
100,00	150,00	1,70	1,10	$\pm 15\%$ de dimensão nominal (± 1,95)	$\pm 10\%$ de dimensão nominal (± 1,35)	1,95	1,35	2,20	1,65	2,85	2,30	3,35	2,80	3,85	3,30	5,40	4,85
150,00	200,00	2,05	1,35			2,30	1,65	2,55	1,90	3,25	2,55	3,75	3,05	4,25	3,55	5,75	5,10
200,00	250,00	2,45	1,65	$\pm 15\%$ de dimensão nominal (± 2,70)	$\pm 10\%$ de dimensão nominal (± 1,90)	2,70	1,90	2,95	2,15	3,60	2,80	4,10	3,30	4,60	3,80	6,15	5,35
250,00	300,00	2,80	1,90			3,05	2,15	3,35	2,40	4,00	3,05	4,50	3,55	5,00	4,05	6,55	5,60
300,00	350,00	3,20	2,15	$\pm 15\%$ de dimensão nominal (± 3,45)	$\pm 10\%$ de dimensão nominal (± 2,40)	3,45	2,40	3,70	2,65	4,35	3,30	4,90	3,80	5,40	4,30	6,90	5,85
350,00	400,00	3,60	2,40			3,85	2,65	4,10	2,90	4,75	3,55	5,25	4,05	5,75	4,55	7,30	6,10
400,00	450,00	3,95	2,65	$\pm 15\%$ de dimensão nominal (± 4,20)	$\pm 10\%$ de dimensão nominal (± 2,90)	4,20	2,90	4,45	3,15	5,15	3,80	5,65	4,30	6,15	4,85	7,65	6,35
450,00	500,00	4,35	2,90			4,60	3,15	4,85	3,40	5,50	4,05	6,00	4,55	6,55	5,10	8,05	6,60
500,00	550,00	4,70	3,15	$\pm 15\%$ de dimensão nominal (± 5,00)	$\pm 10\%$ de dimensão nominal (± 3,40)	5,00	3,40	5,25	3,35	5,90	4,30	6,40	4,85	6,90	5,35	8,45	6,85
550,00	600,00	5,10	3,40			5,35	3,65	5,60	3,90	6,25	4,55	6,80	5,10	7,30	5,60	8,80	7,10

Tolerâncias de retilineidade para barras, vergalhões e perfis somente extrudados					
Produto	Dimetro ou largura nominal (vergalhões ou barras) DCC (perfis)		Espessura nominal (barras retangulares) Espessura mínima (perfis)	Desvio permitível da retilineidade (D máximo) no comprimento total ou qualquer trecho de 300 mm ou mais	
	Acima de	Até		Acima de	Até
Vergalhões e barras quadrados, hexagonais e octogonais	Todos	Todos	-	-	1
Barra retangulares	-	40,00	-	2,50	4
			2,50	-	1
	40,00	-	2,50	-	1
Perfis	-	40,00	-	2,50	4
		40,00	-	2,50	1

Obs.: Todas as temperas exceto O, TX510 e TX511

Tolerâncias de torção para barras e perfis somente extrudados					
Produto	Largura nominal (barras) , DCC (perfis) mm		Espessura nominal (barras retangulares) Espessura mínima (perfis) mm		Torção máxima permitível no comprimento total ou em qualquer trecho de 300 mm ou mais
	Acima de	Até	Acima de	Até	
Barras retangulares	-	40,00	Todas	Todas	3º/m , máximo 7º
	40,00	80,00	Todas	Todas	1,5º/m , máximo 5º
	80,00	-	Todas	Todas	1º/m , máximo 3º
Perfis	-	40,00	Todas	Todas	3º/m , máximo 7º
	40,00	80,00	Todas	Todas	1,5º/m , máximo 5º
	80,00	-	Todas	Todas	1º/m , máximo 3º

Obs.: Todas as temperas exceto O, TX510 e TX511

Tolerâncias no comprimento de arames, vergalhões, barras e perfis somente extrudados					
Dimensões em milímetros					
Diametro ou largura nominal (arames, barras ou vergalhões), DCC (perfis)		Desvio permitível do comprimento nominal - Tolerância somente para mais			
Acima de	Até	Até 5.000	Acima de 5.000 até 10.000	Acima de 10.000 até 15.000	Acima de 15.000
-	70,00	4	7	10	25
70,00	200,00	6	9	11	25
200,00	-	7	10	13	25

Tolerâncias na planicidade para barras e perfis sólidos e semitubulares somente extrudados								
Dimensões em milímetros								
Largura nominal da superfície (L)		Desvio permitível D (máximo)						
Acima de		Tolerâncias						
- 25,00		0,10						
25,00 150,00		0,004 x L						
Em qualquer trecho de 25 de largura		0,10						

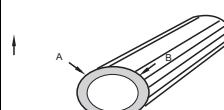
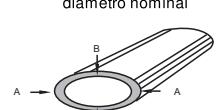
A tolerância para materiais na tempera "O" deve ser quatro vezes a tolerância padrão indicada

Tolerâncias na planicidade para perfis tubulares somente extrudados					
Dimensões em milímetros					
Menor espessura do metal que forma a superfície			Desvio permitível D (máximo)		
Acima de	Até	Largura (L) até 25, inclusive ou qualquer trecho de 25 de superfícies mais largas	Largura (L) acima de 25 até 150		
-	5,00	0,15	0,006 x L		
5,00	-	0,10	0,004 x L		

A tolerância para materiais na tempera "O" deve ser quatro vezes a tolerância padrão indicada

Tolerâncias no diâmetro externo nominal de tubos redondos somente extrudados

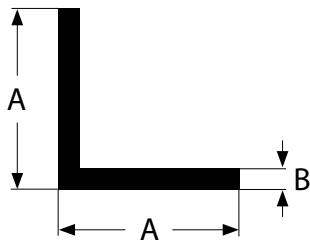
Dimensões em milímetros

		Tolerâncias para mais e para menos			
		Desvio permitível entre o diâmetro médio e o nominal - Diferença entre $\frac{1}{2}$ (AA + BB) e o diâmetro nominal		Desvio permitível entre o diâmetro em qualquer ponto e o diâmetro nominal - Diferença entre AA ou BB e o diâmetro nominal	
Diâmetro nominal					
Coluna 1		Coluna 2		Coluna 3	
Acima de	Até	Ligas 5xxx com $Mg > 4,0\%$	Outras ligas	Ligas 5xxx com $Mg > 4,0\%$	Outras ligas
12,50	25,00	0,38	0,25	0,76	0,50
25,00	50,00	0,46	0,30	0,96	0,64
50,00	100,00	0,58	0,38	1,15	0,76
100,00	150,00	0,96	0,64	1,90	1,25
150,00	200,00	1,35	0,88	2,85	1,90
200,00	250,00	1,75	1,15	3,80	2,55
250,00	300,00	2,10	1,40	4,80	3,20
300,00	350,00	2,50	1,65	5,70	3,80
350,00	400,00	2,85	1,90	6,70	4,45
400,00	450,00	3,25	2,15	7,60	5,10

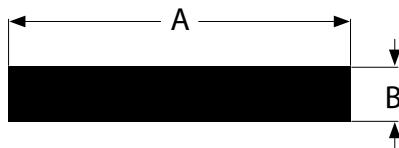
Tolerâncias na espessura da parede de tubos redondos somente extrudados

Dimensões em milímetros

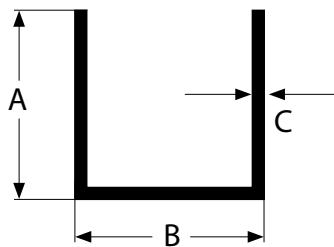
Diâmetro nominal		Tolerâncias para mais e para menos								
		Desvio permitível entre a espessura média de parede e a espessura nominal da parede - Diferença entre $\frac{1}{2}(AA + BB)$ e a espessura nominal da parede								
Diâmetro externo		Desvio permitível entre a espessura da parede em qualquer ponto e a espessura média da parede (excentricidade) - Diferença entre AA e a espessura média da parede								
		Diâmetro externo								
Até 30		Acima de 30 até 80		Acima de 80 até 130		Acima de 130				
Coluna 1		Coluna 2		Coluna 3		Coluna 4		Coluna 5		Coluna 6
Acima de	Até	Ligas 5xxx com Mg > 4,0 %	Outras ligas	Ligas 5xxx com Mg > 4,0 %	Outras ligas	Ligas 5xxx com Mg > 4,0 %	Outras ligas	Ligas 5xxx com Mg > 4,0 %	Outras ligas	Qualquer liga
-	1,20	0,23	0,15	-	-	-	-	-	-	Mais ou menos 10% da espessura média da parede Maximo $\pm 1,50$ Minimo $\pm 0,25$
1,20	1,60	0,28	0,18	0,30	0,20	0,30	0,20	0,38	0,25	
1,60	2,00	0,30	0,20	0,30	0,20	0,36	0,23	0,46	0,30	
2,00	3,20	0,36	0,23	0,36	0,23	0,38	0,25	0,58	0,38	
3,20	6,30	0,36	0,23	0,36	0,23	0,50	0,33	0,76	0,50	
6,30	10,00	0,43	0,28	0,43	0,28	0,60	0,41	0,96	0,64	
10,00	12,50	-	-	0,58	0,38	0,80	0,54	1,35	0,88	
12,50	20,00	-	-	0,76	0,50	1,05	0,72	1,75	1,15	
20,00	25,00	-	-	-	-	1,35	0,88	2,10	1,40	
25,00	30,00	-	-	-	-	1,75	1,15	2,50	1,65	
30,00	50,00	-	-	-	-	-	-	2,85	1,90	



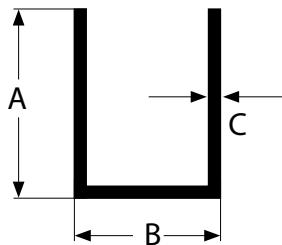
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0002	CANTONEIRA 12,70 X 1,00MM	0,065	1/2"	1/2"	1,00MM
MAC-0003	CANTONEIRA 19,05 X 1,00MM	0,100	3/4"	3/4"	1,00MM
MAC-0004	CANTONEIRA 25,40 X 1,00MM	0,134	1"	1"	1,00MM
MAC-0006	CANTONEIRA 38,10 X 1,58MM	0,321	1 1/2"	1 1/2"	1/16"
MAC-0005	CANTONEIRA 50,80 X 3,00MM	0,801	2"	2"	1/8"



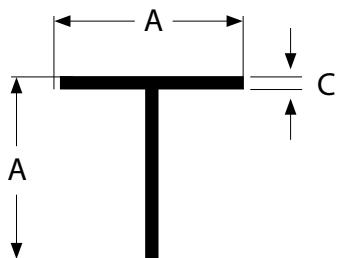
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0029	BARRA CHATA 9,52 X 3,17MM	0,082	3/8"	---	1/8"
MAC-0117	BARRA CHATA 19,05 X 4,76MM	0,245	3/4"	---	3/16"
MAC-0120	BARRA CHATA 25,40 X 9,52MM	0,655	1"	---	3/8"
MAC-0115	BARRA CHATA 38,1 X 6,35MM	0,655	1.1/2"	---	1/4"
MAC-0122	BARRA CHATA 38,10 X 3,17MM	0,317	1.1/2"	---	1/8"
MAC-0118	BARRA CHATA 38,1 X 4,76MM	0,491	1.1/2"	---	3/16"
MAC-0159	BARRA CHATA 38,10 X 9,52MM	0,984	1.1/2"	---	3/8"
MAC-0119	BARRA CHATA 50,80 X 4,76MM	0,655	2"	---	3/16"
MAC-0116	BARRA CHATA 50,80 X 6,35MM	0,874	2"	---	1/4"
MAC-0184	BARRA CHATA 50,80 X 12,70MM	1,748	2"	---	1/2"
MAC-0056	BARRA CHATA 76,10 X 6,35MM	1,311	3"	---	1/4"
MAC-0185	BARRA CHATA 76,10 X 12,70MM	2,623	3"	---	1/2"
MAC-0114	BARRA CHATA 101,6 X 9,52MM	2,621	4"	---	3/8"
MAC-0121	BARRA CHATA 101,60 X 12,70MM	3,496	4"	---	1/2"



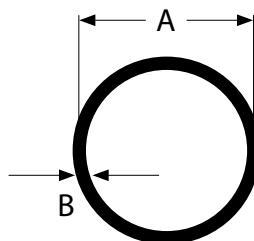
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0050	PERFIL "U" 9,52 X 1,58	0,108	3/8"	3/8"	1/16"
MAC-0015	PERFIL "U" 12,70 X 1,40MM	0,133	1/2"	1/2"	1,40
MAC-0014	PERFIL "U" 15,87 X 1,30MM	0,158	5/8"	5/8"	1,30



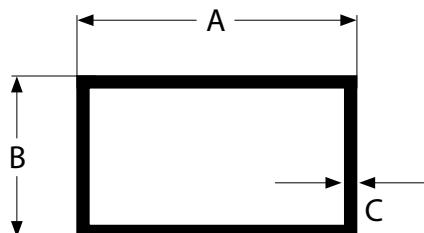
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0016	PERFIL "U" 15,87 X 25,40	0,208	5/8"	1"	1,00
MAC-0041	PERFIL U 35 X 29 X 1,2	0,315	35,00	29,00	1,20



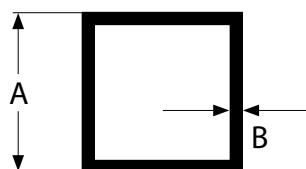
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0051	PERFIL "T" 25,40 X 1,00MM	0,135	1"	1"	1,00



COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0187	TUBO REDONDO 7,93 X 1,00MM	0,059	5/16"	---	1,00MM
MAC-0011	TUBO REDONDO 12,70 X 1,00MM	0,099	1/2"	---	1,00MM
MAC-0192	TUBO REDONDO 15,00 X 1,00MM	0,119	5/8"	---	1,00MM
MAC-0186	TUBO REDONDO 15,87 X 1,0MM	0,126	5/8"	---	1,00MM
MAC-0063	TUBO REDONDO 15,87 X 1,2MM	0,149	5/8"	---	1,20MM
MAC-0008	TUBO REDONDO 19,05 X 1,20MM	0,182	3/4"	---	1,20MM
MAC-0026	TUBO REDONDO 19,05 X 1,58MM	0,235	3/4"	---	1/16"
MAC-0067	TUBO REDONDO 19,05 X 6,35MM	0,686	3/4"	---	1/4"
MAC-0033	TUBO REDONDO 22,22 X 1,00MM	0,180	7/8"	---	1,0MM
MAC-0062	TUBO REDONDO 22,22 X 1,58MM	0,278	7/8"	---	1/16"
MAC-0027	TUBO REDONDO 25,40 X 1,00MM	0,207	1"	---	1,00MM
MAC-0057	TUBO REDONDO 25,40 X 1,58MM	0,320	1"	---	1/16"
MAC-0058	TUBO REDONDO 31,75 X 1,58MM	0,405	1.1/4"	---	1/16"
MAC-0061	TUBO REDONDO 31,75 X 3,17MM	0,771	1.1/4"	---	1/8"
MAC-0064	TUBO REDONDO 38,10 X 1,58MM	0,492	1.1/2"	---	1/16"
MAC-0012	TUBO REDONDO 38,10 X 3,17MM	0,942	1.1/2"	---	1/8"
MAC-0189	TUBO REDONDO 50,80 X 1,20MM	0,506	1.1/2"	---	1,20MM
MAC-0060	TUBO REDONDO 50,80 X 3,17MM	1,284	2"	---	1/8"
MAC-0059	TUBO REDONDO 76,20 X 3,17MM	1,970	3"	---	1/8"



COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0013	TUBO RET. 20,00 X 12,50 X 1,00MM	0,165	---	---	---
MAC-0035	TUBO RET. 25,40 X 12,70 X 1,00MM	0,196	1"	1/2"	1,00MM
MAC-0028	TUBO RET. 50,80 X 12,70 X 1,10MM	0,365	2"	1/2"	1,10MM
MAC-0009	TUBO RET. 50,80 X 25,40 X 1,00MM	0,402	2"	1"	1,00MM
MAC-0042	TUBO RET. 76,20 X 38,10 X 1,40MM	0,846	3"	1.1/2"	1,40MM
MAC-0036	TUBO RET. 101,60 X 50,80 X 1,30MM	1,055	4"	2"	1,30MM
MAC-0010	TUBO RET. 101,60 X 50,80 X 1,80MM	1,451	4"	2"	1,80MM
MAC-0034	TUBO RET. 101,60 X 50,80 X 2,00MM	1,608	4"	2"	2,00MM



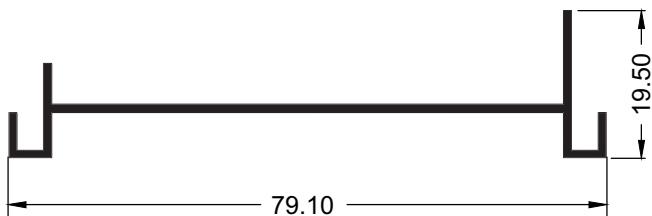
COD. ALUX	DESCRÍÇÃO	PESO METRO	MEDIDA A	MEDIDA B	MEDIDA E
MAC-0007	TUBO QUADRADO 25,40 X 1,00 MM	0,263	1"	---	1,00MM
MAC-0150	TUBO QUADRADO 50,80 X 1,40MM	0,749	2"	---	1,40MM

LINHA 16

MAC-0065

0,346 kg/m

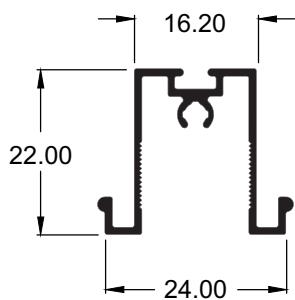
Mer. ----



MAC-0072

0,244 kg/m

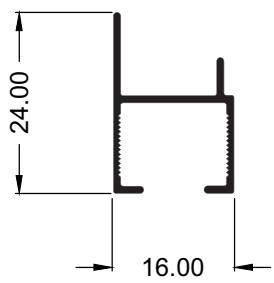
Mer. ----



MAC-0074

0,160 kg/m

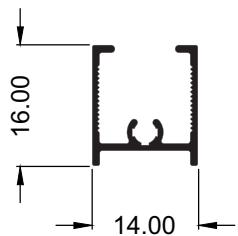
Mer. ----



MAC-0071

0,137 kg/m

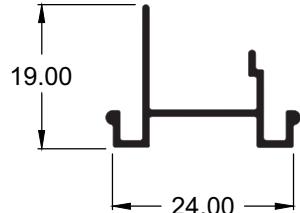
Mer. ----



MAC-0073

0,179 kg/m

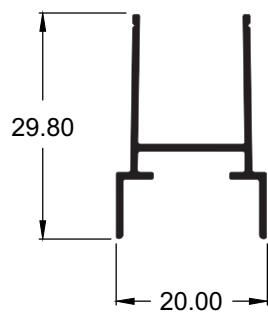
Mer. ----



MAC-0075

0,220 kg/m

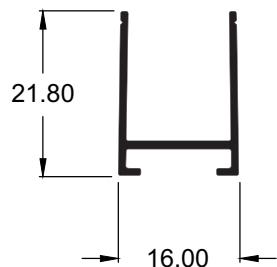
Mer. ----



MAC-0076

0,169 kg/m

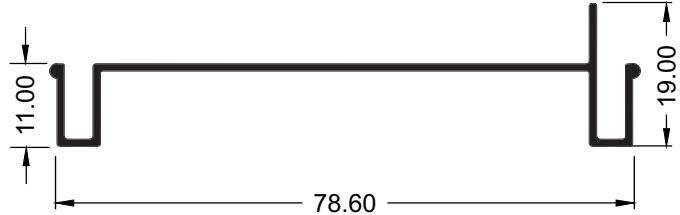
Mer. ----



MAC-0077

0,346 kg/m

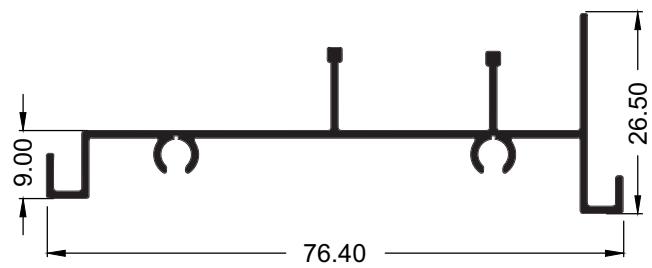
Mer. ----



MAC-0078

0,448 kg/m

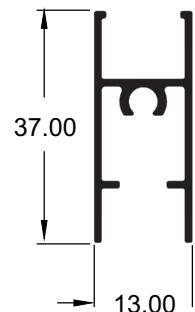
Mer. ----



MAC-0083

0,243 kg/m

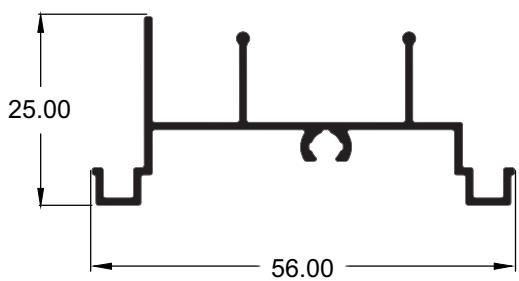
Mer. ----



MAC-0084

0,378 kg/m

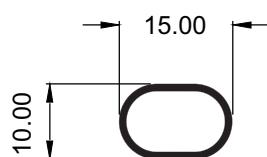
Mer. ----



MAC-0089

0,103 kg/m

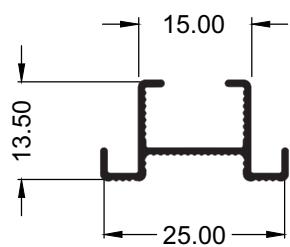
Mer. ----



MAC-0090

0,165 kg/m

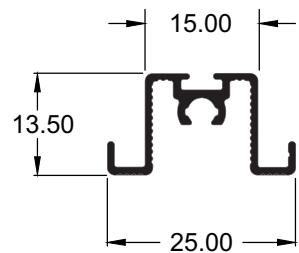
Mer. ----



MAC-0091

0,197 kg/m

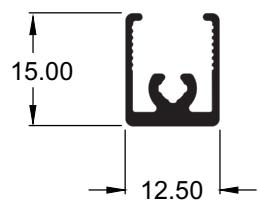
Mer. ----



MAC-0092

0,186 kg/m

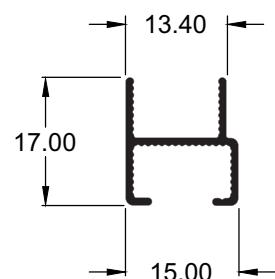
Mer. ----



MAC-0093

0,139 kg/m

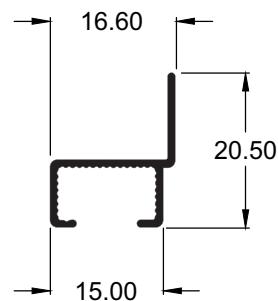
Mer. ----



MAC-0094

0,131 kg/m

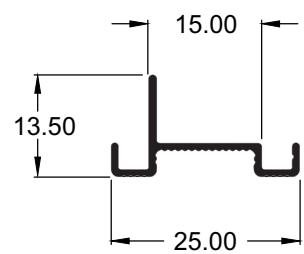
Mer. ----



MAC-0095

0,128 kg/m

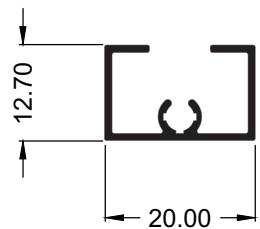
Mer. ----



MAC-0113

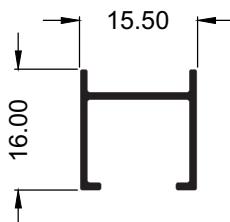
0,170 kg/m

Mer. ----

**MAC-0220**

0,132 kg/m

Mer. ----



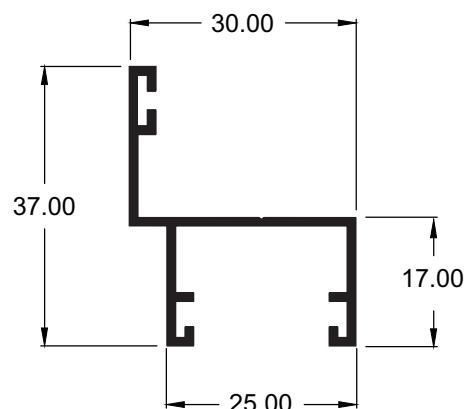
Arquivos para correção

LINHA 25

MAC-0038

0,305 kg/m

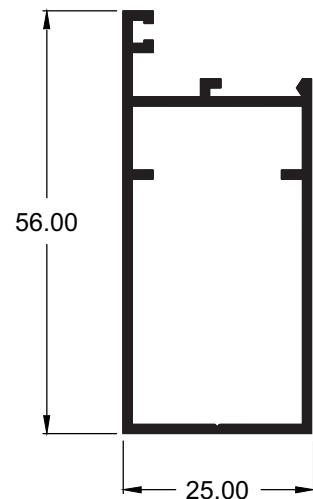
Mer. ----



MAC-0039

0,536 kg/m

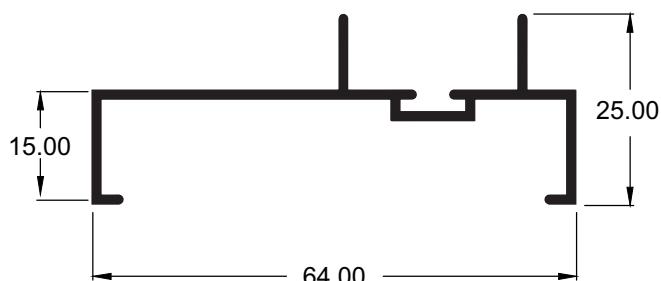
Mer. ----



MAC-0040

0,378 kg/m

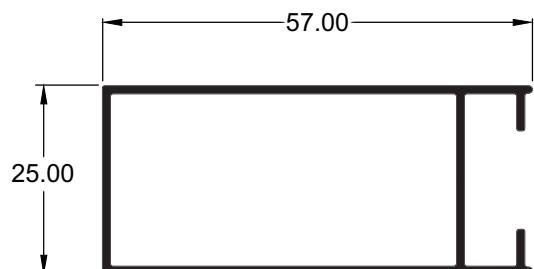
Mer. ----



MAC-0086

0,504 kg/m

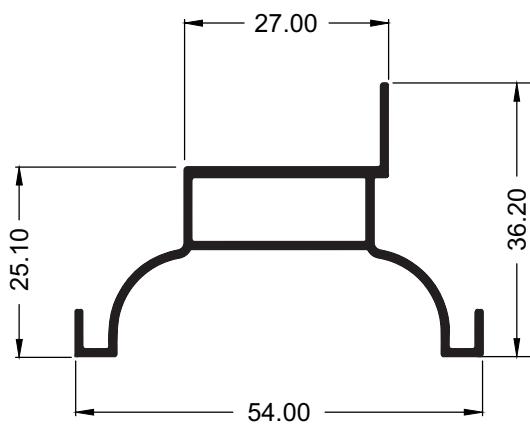
Mer. ----



MAC-0123

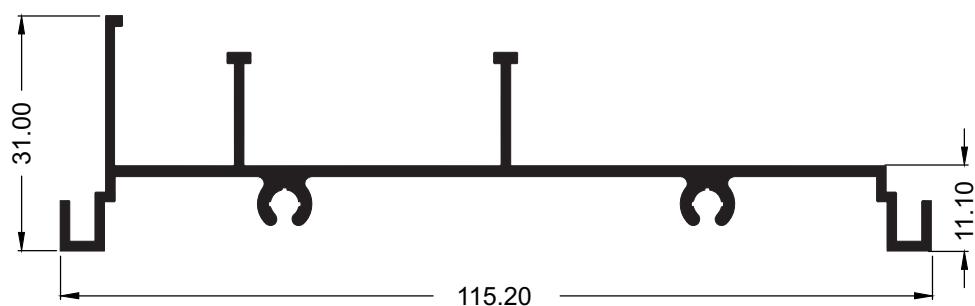
0,403 kg/m

Mer. ----



MAC-0124

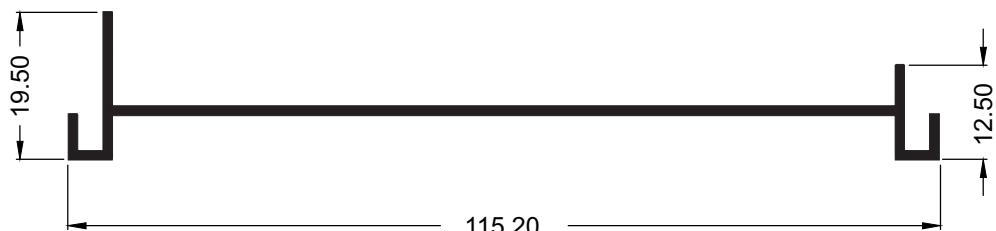
0,787 kg/m



MAC-0125

0,461 kg/m

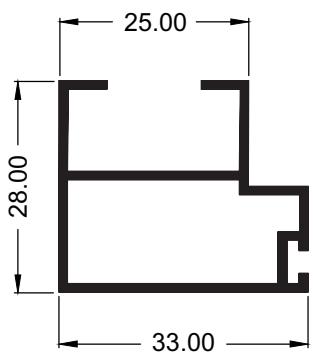
Mer. ----



MAC-0126

0,403 kg/m

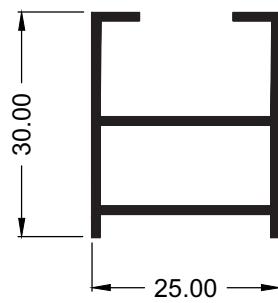
Mer. ----



MAC-0127

0,345 kg/m

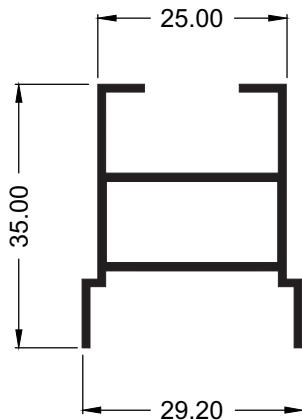
Mer. ----



MAC-0128

0,387 kg/m

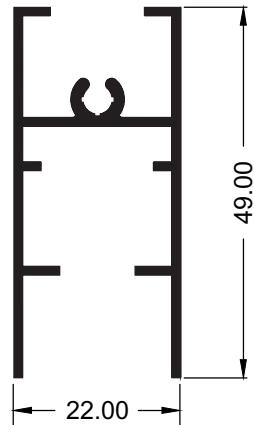
Mer. ----



MAC-0129

0,464 kg/m

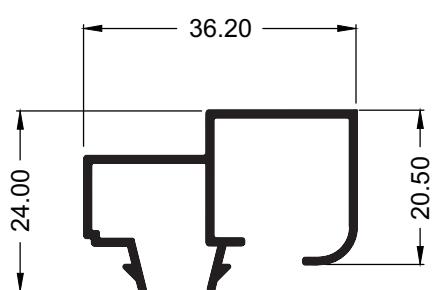
Mer. ----



MAC-0130

0,307 kg/m

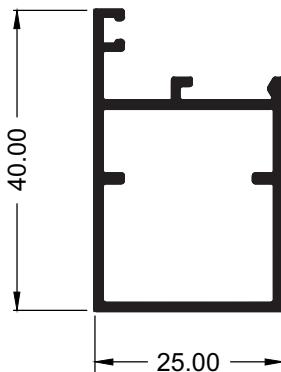
Mer. ----



MAC-0140

0,434 kg/m

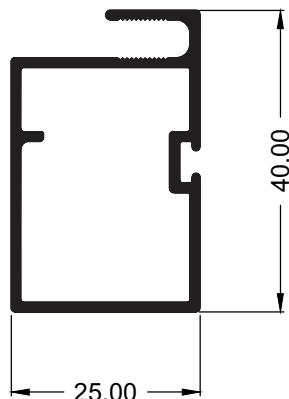
Mer. ----



MAC-0227

0,492 kg/m

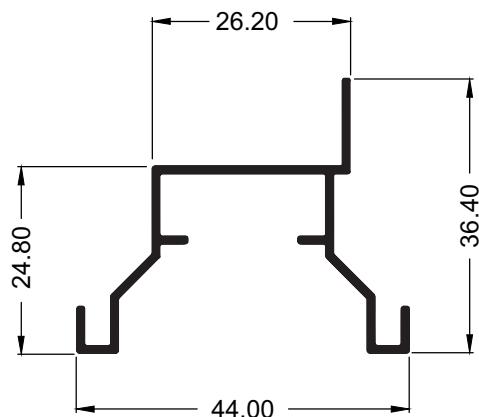
Mer. ----



MAC-0261

0,316 kg/m

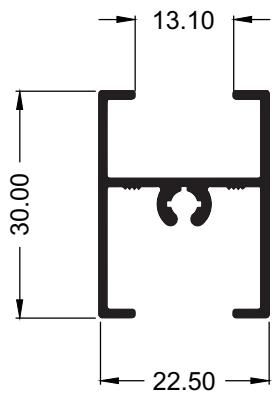
Mer. ----



MAC-0262

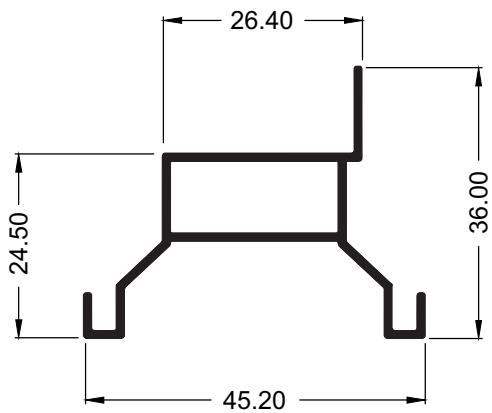
0,308 kg/m

Mer. ----

**MAC-0286**

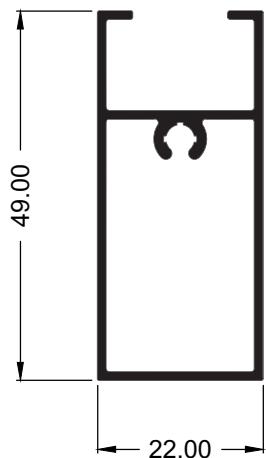
0,355 kg/m

Mer. ----

**MAC-0322**

0,524 kg/m

Mer. ----

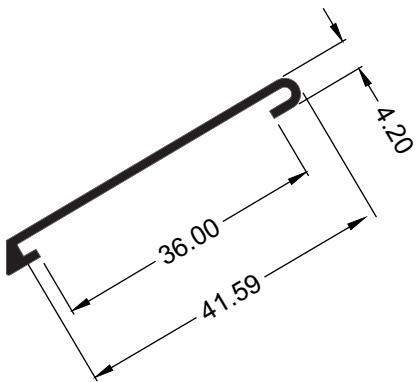


LINHA AR CONDICIONADO

MAC-0134

0,187 kg/m

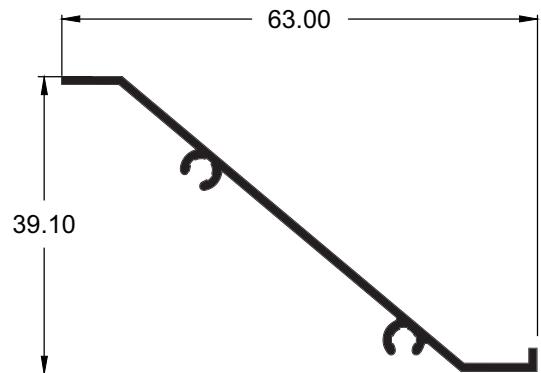
Mer. ----



MAC-0160

0,285 kg/m

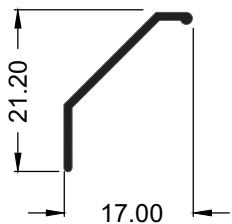
Mer. ----



MAC-0161

0,090 kg/m

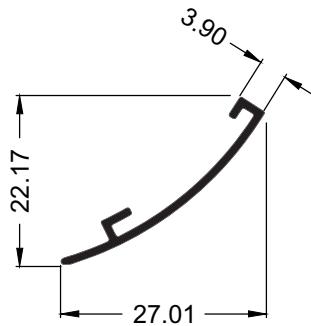
Mer. ----



MAC-0162

0,121 kg/m

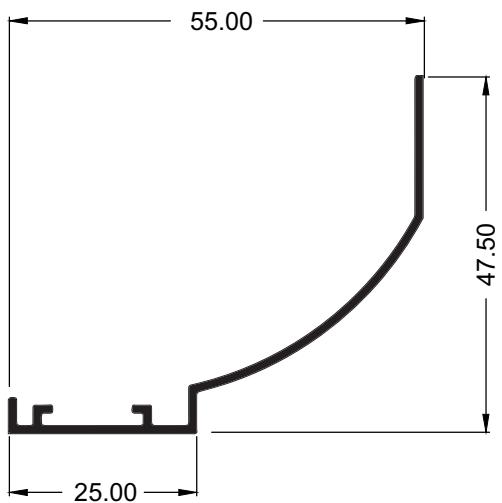
Mer. ----



MAC-0163

0,297 kg/m

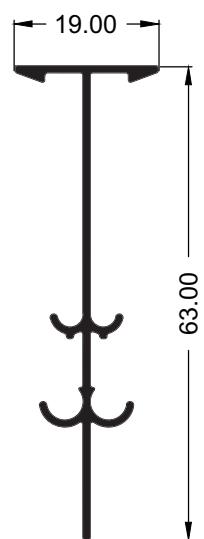
Mer. ----



MAC-0164

0,308 kg/m

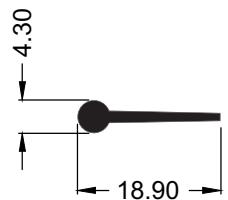
Mer. ----



MAC-0165

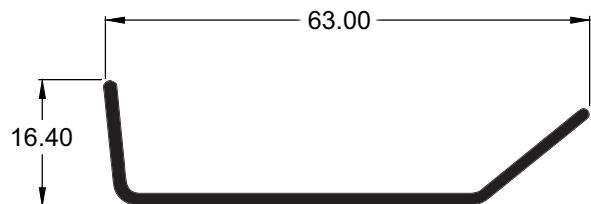
0,091 kg/m

Mer. ----

**MAC-0328**

0,325 kg/m

Mer. ----

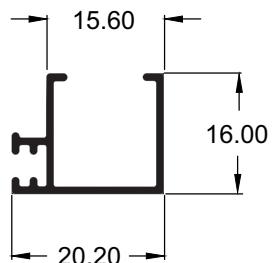


LINHA BOX TEMPERADO 8MM

MAC-0017

0,171 kg/m

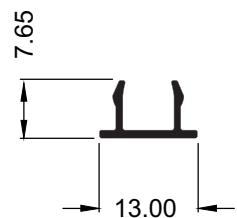
Mer. ----



MAC-0019

0,075 kg/m

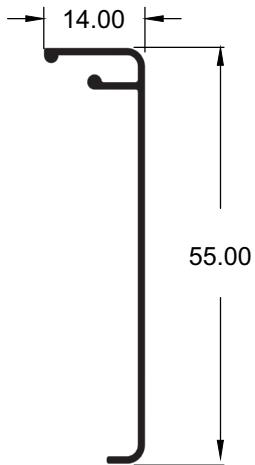
Mer. ----



MAC-0021

0,218 kg/m

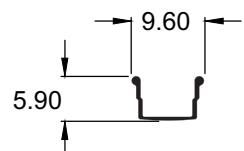
Mer. ----



MAC-0018

0,030 kg/m

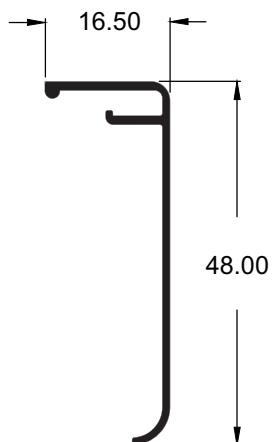
Mer. ----



MAC-0020

0,213 kg/m

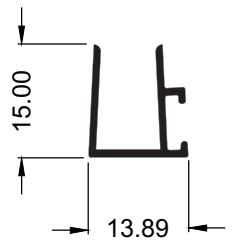
Mer. ----



MAC-0022

0,126 kg/m

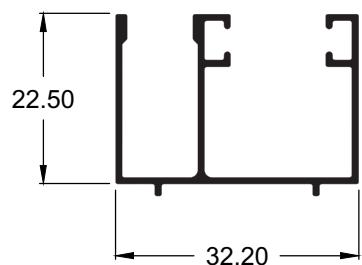
Mer. ----



MAC-0024

0,302 kg/m

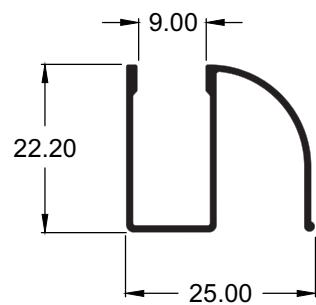
Mer. ----



MAC-0025

0,214 kg/m

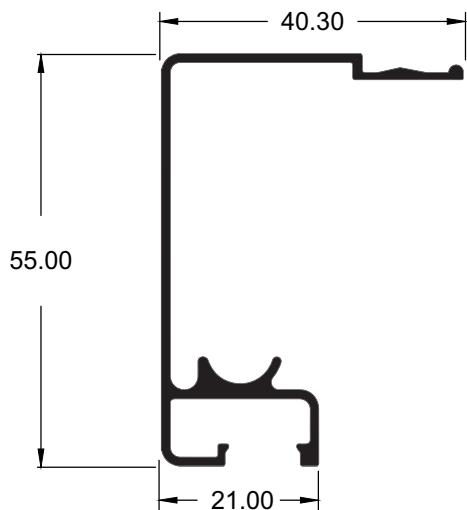
Mer. ----



MAC-0030

0,507 kg/m

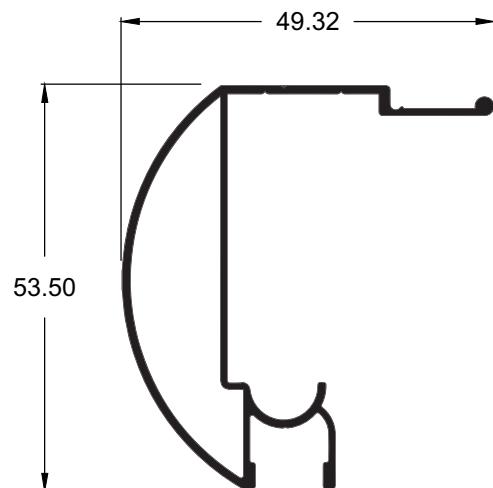
Mer. ----



MAC-0031

0,522 kg/m

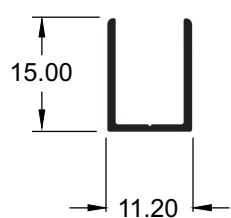
Mer. ----



MAC-0032

0,111 kg/m

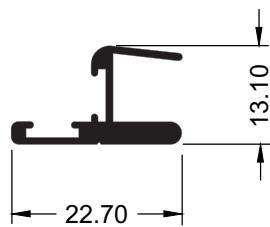
Mer. ----



MAC-0037

0,214 kg/m

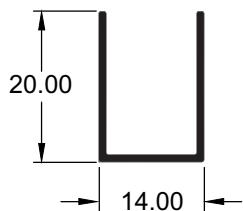
Mer. ----



MAC-0230

0,140 kg/m

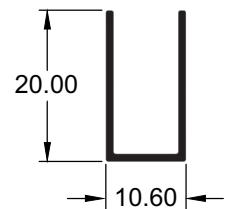
Mer. ----



MAC-0231

0,132 kg/m

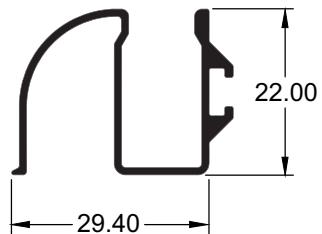
Mer. ----



MAC-0232

0,276 kg/m

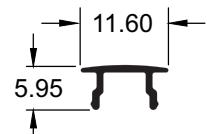
Mer. ----



MAC-0233

0,054 kg/m

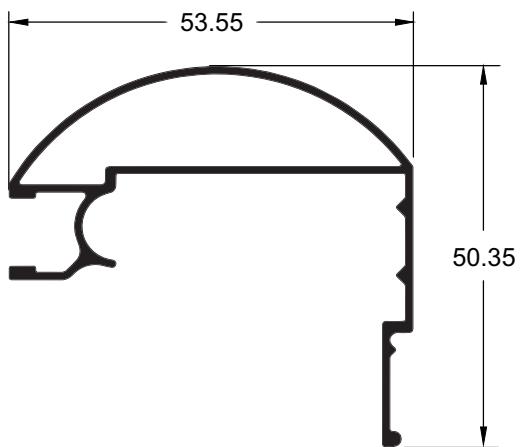
Mer. ----



MAC-0234

0,528 kg/m

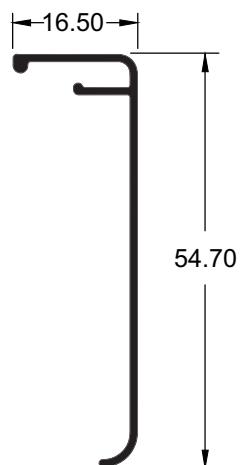
Mer. ----



MAC-0235

0,222 kg/m

Mer. ----

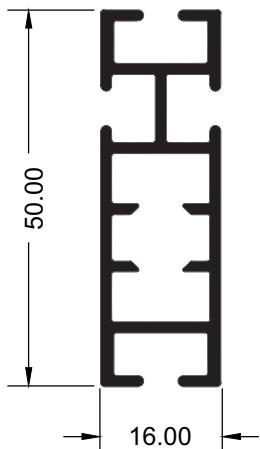


LINHA DIVERSOS

MAC-0104

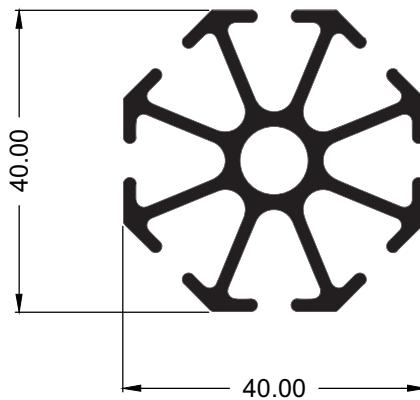
0,699 kg/m

Mer. ----

**MAC-0105**

1,129 kg/m

Mer. ----

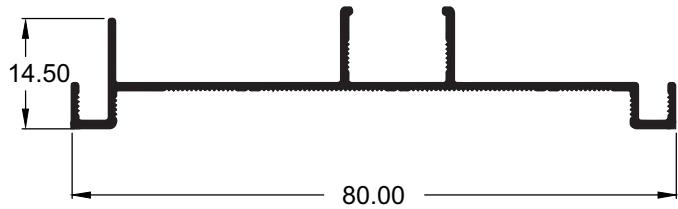


LINHA HOMOLOGADA

MAC-0096

0,314 kg/m

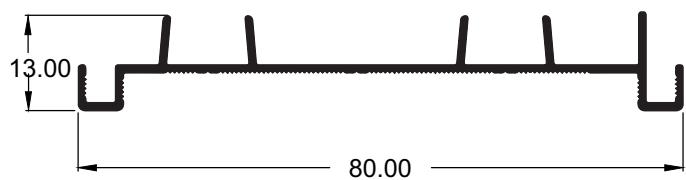
Mer. ----



MAC-0097

0,322 kg/m

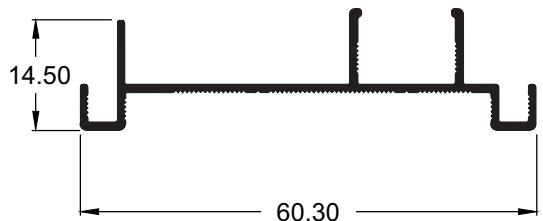
Mer. ----



MAC-0098

0,268 kg/m

Mer. ----



MAC-0099

0,243 kg/m

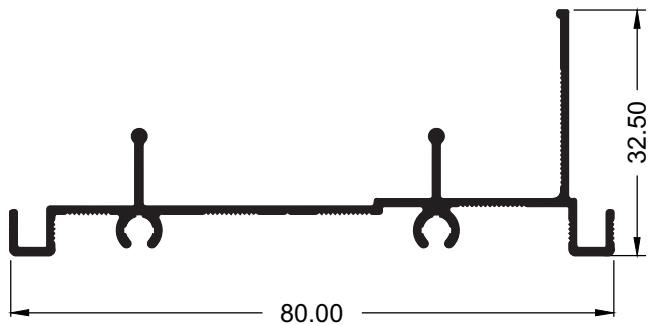
Mer. ----



MAC-0100

0,450 kg/m

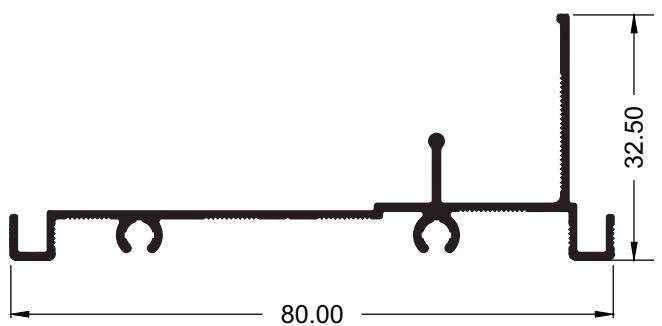
Mer. ----



MAC-0101

0,419 kg/m

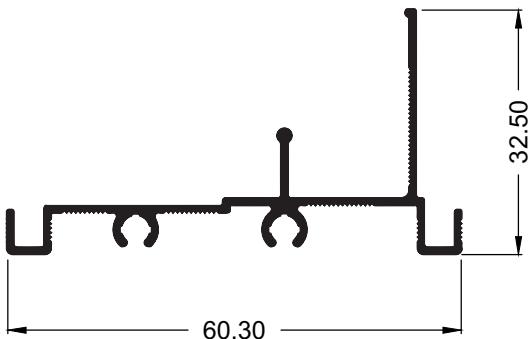
Mer. ----



MAC-0102

0,368 kg/m

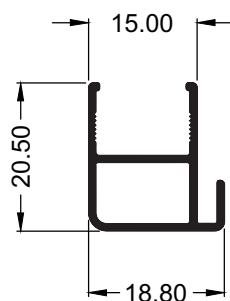
Mer. ----



MAC-0103

0,203 kg/m

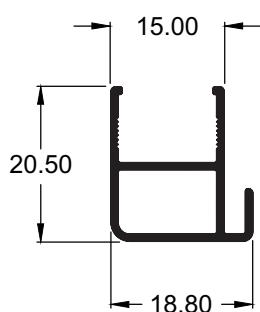
Mer. ----



MAC-0106

0,293 kg/m

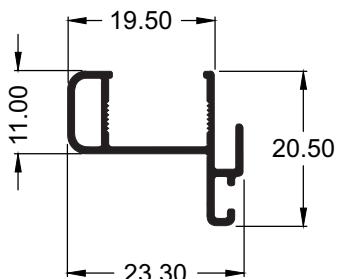
Mer. ----



MAC-0107

0,203 kg/m

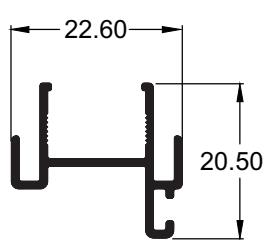
Mer. ----



MAC-0108

0,192 kg/m

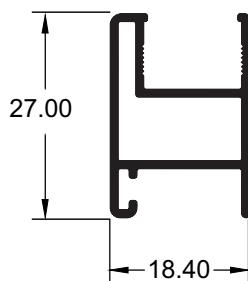
Mer. ----



MAC-0109

0,271 kg/m

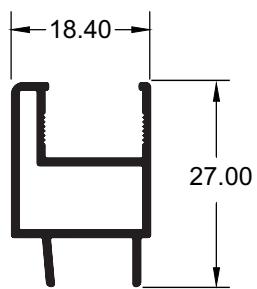
Mer. ----



MAC-0110

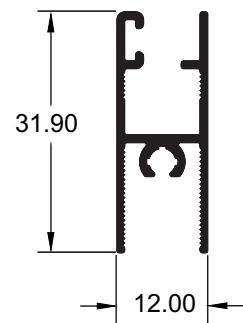
0,259 kg/m

Mer. ----

**MAC-0111**

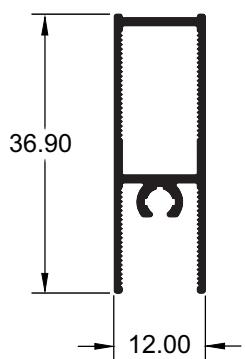
0,245 kg/m

Mer. ----

**MAC-0112**

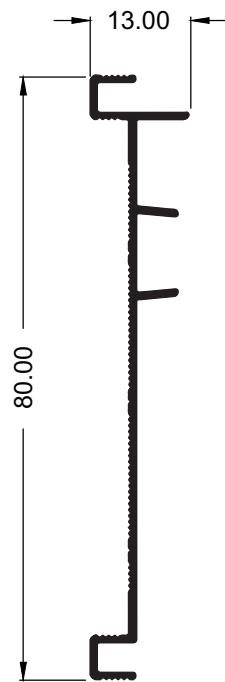
0,265 kg/m

Mer. ----

**MAC-0311**

0,279 kg/m

Mer. ----

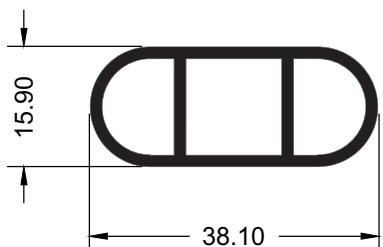


LINHA MOVELEIRO

MAC-0080

0,492 kg/m

Mer. ----

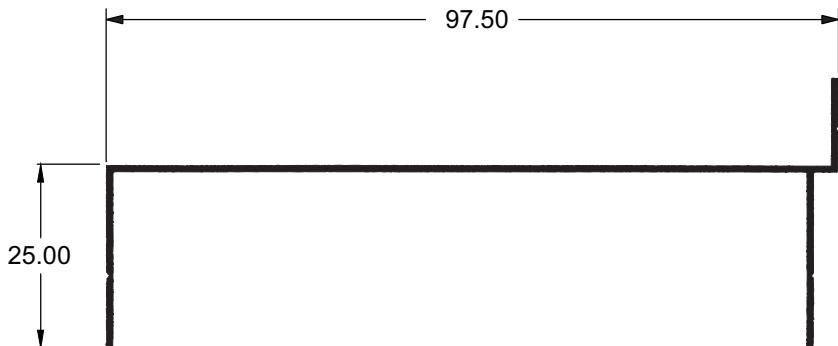


LINHA POLICARBONATO

MAC-0131

0,510 kg/m

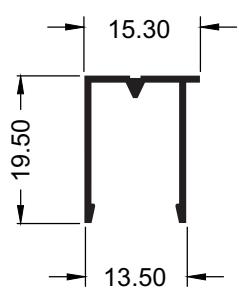
Mer. ----



MAC-0132

0,153 kg/m

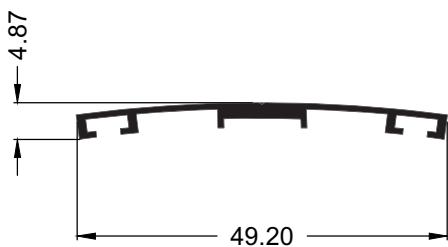
Mer. ----



MAC-0135

0,196 kg/m

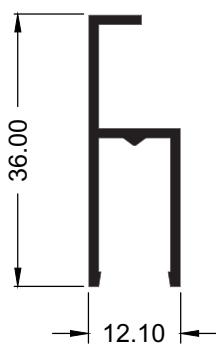
Mer. ----



MAC-0133

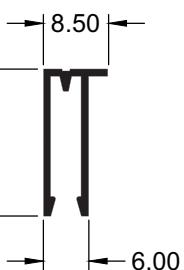
0,260 kg/m

Mer. ----



MAC-0136

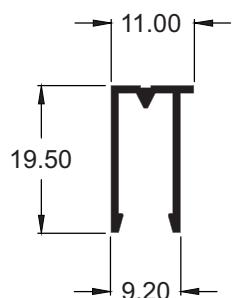
0,133 kg/m



MAC-0137

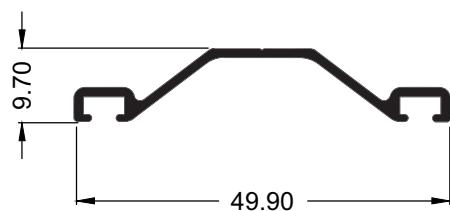
0,142 kg/m

Mer. ----

**MAC-0138**

0,238 kg/m

Mer. ----

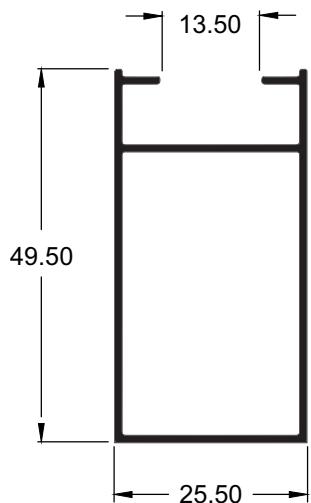


LINHA PORTA BALCÃO

MAC-0085

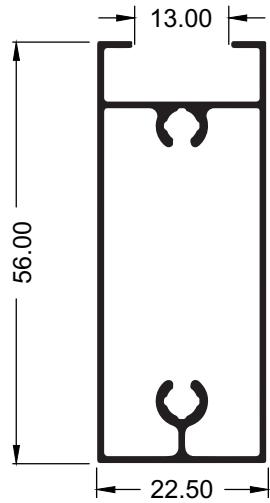
0,422 kg/m

Mer. ----

**MAC-0087**

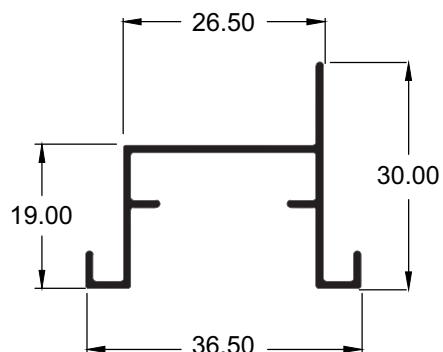
0,551 kg/m

Mer. ----

**MAC-0088**

0,267 kg/m

Mer. ----

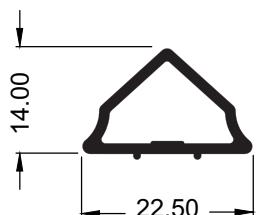


LINHA PORTÃO

MAC-0023

0,215 kg/m

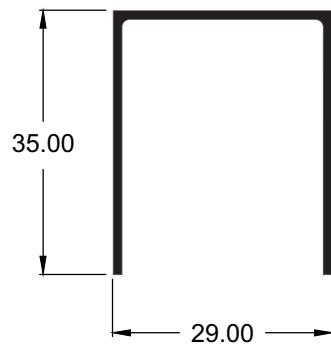
Mer. ----



MAC-0041

0,315 kg/m

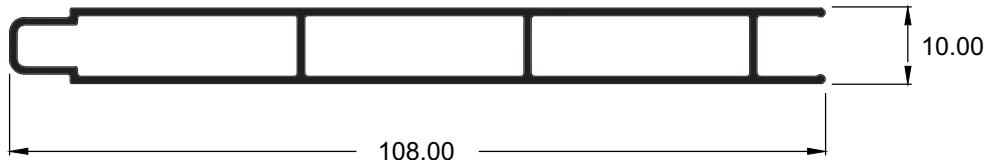
Mer. ----



MAC-0048

0,669 kg/m

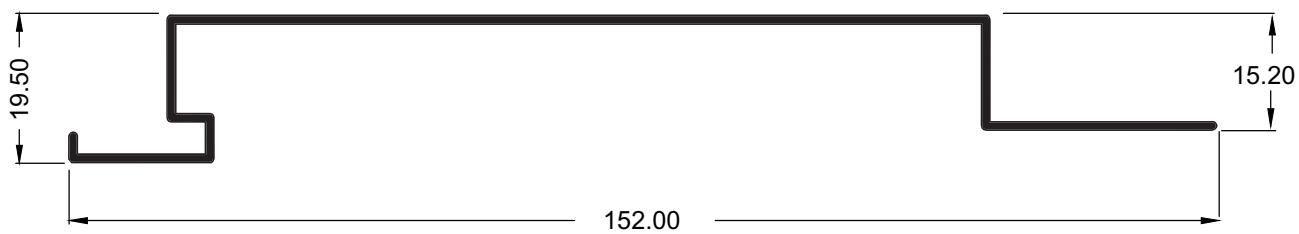
Mer. ----



MAC-0052

0,587 kg/m

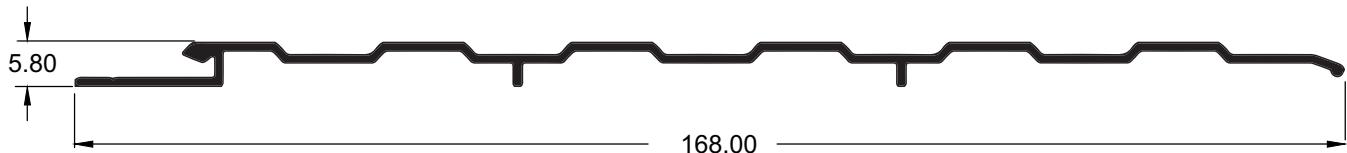
Mer. ----



MAC-0053

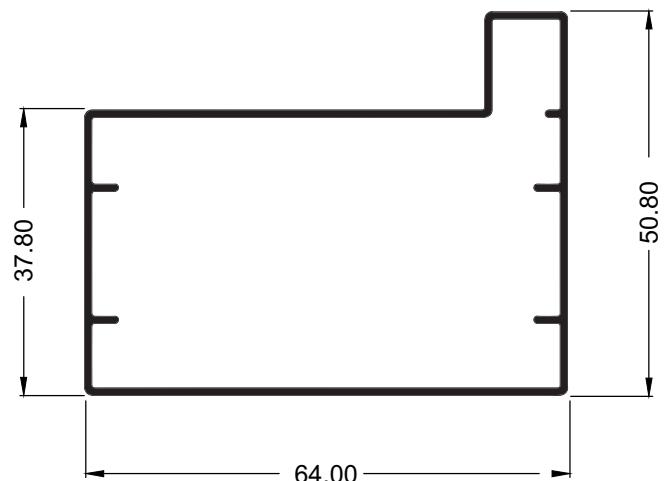
0,587 kg/m

Mer. ----

**MAC-0055**

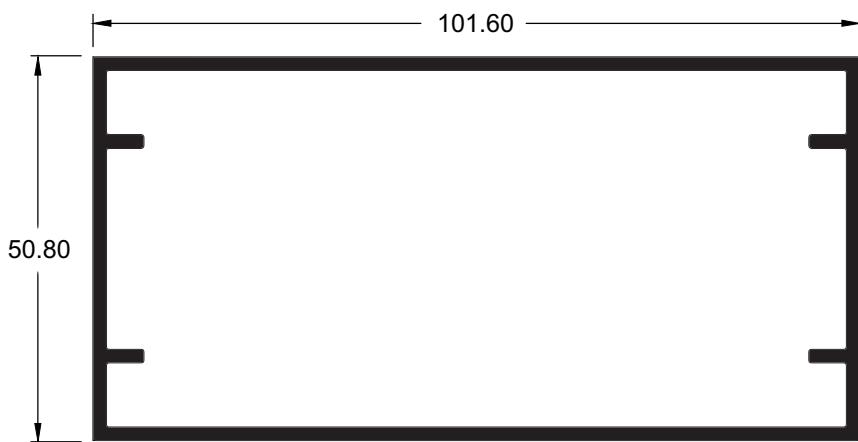
0,650 kg/m

Mer. ----

**MAC-0068**

1,549 kg/m

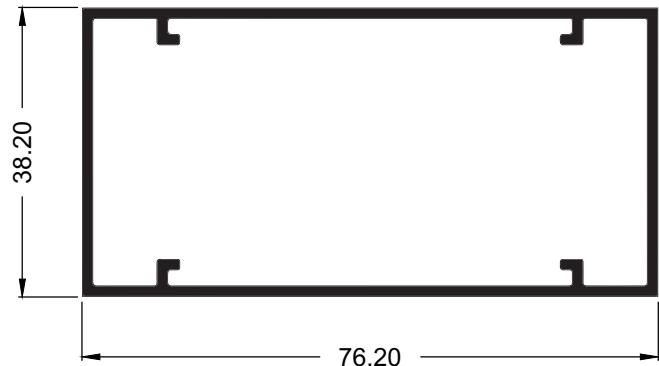
Mer. ----



MAC-0069

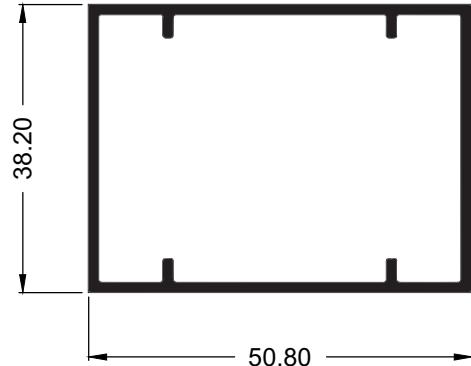
0,924 kg/m

Mer. ----

**MAC-0070**

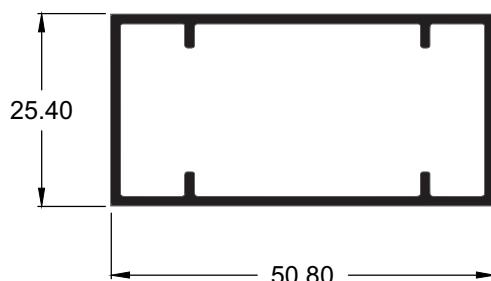
0,701 kg/m

Mer. ----

**MAC-0079**

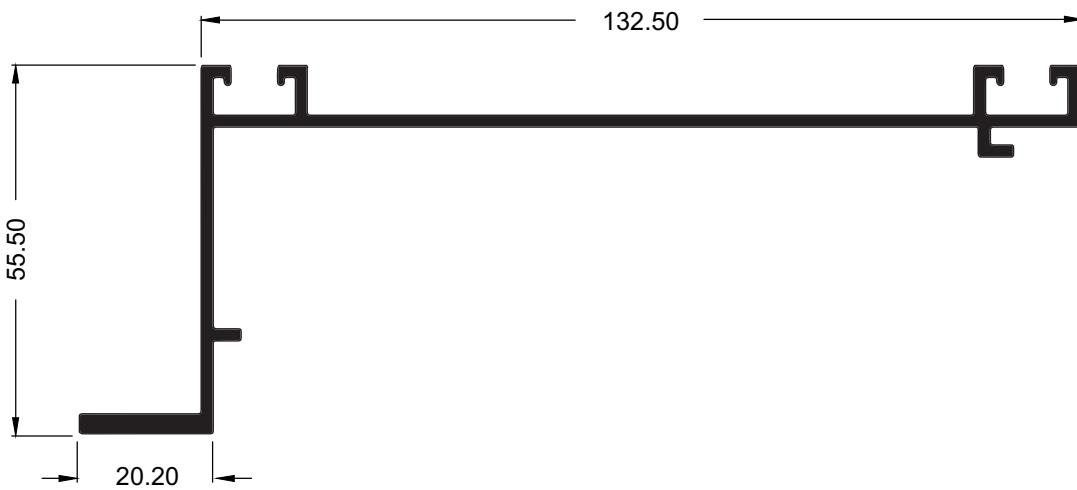
0,563 kg/m

Mer. ----

**MAC-0152**

1,291 kg/m

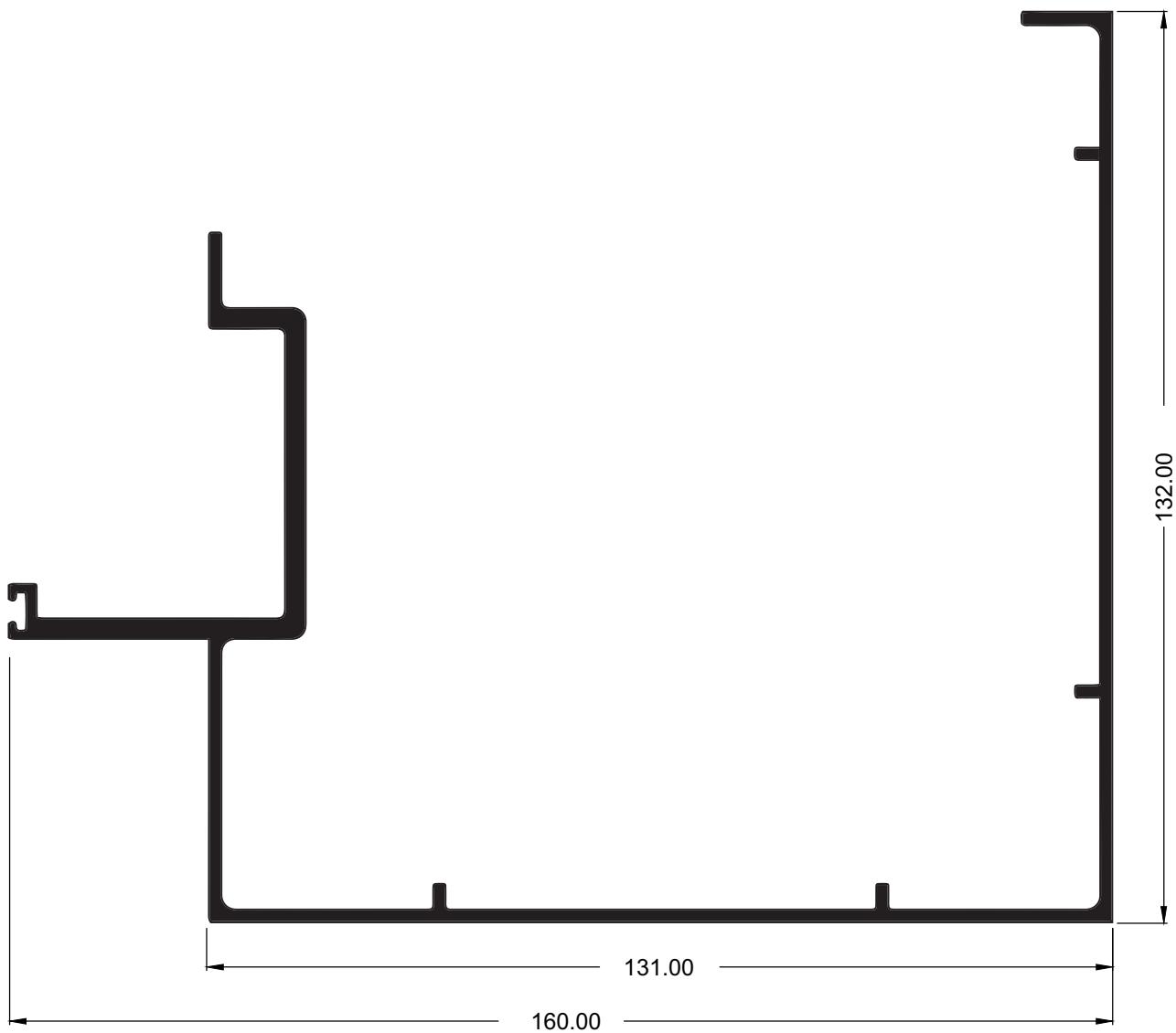
Mer. ----



MAC-0153

2,487 kg/m

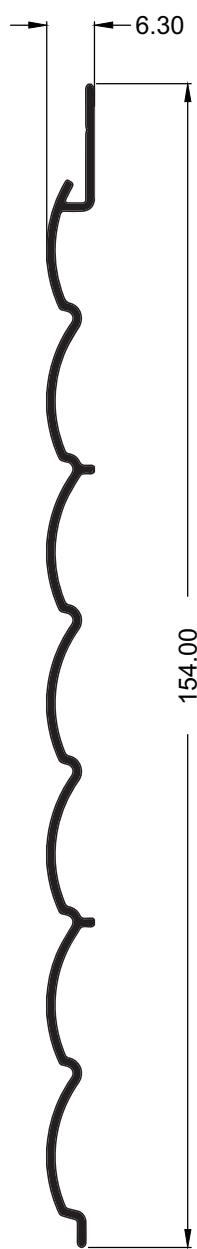
Mer. ----



MAC-0154

0,532 kg/m

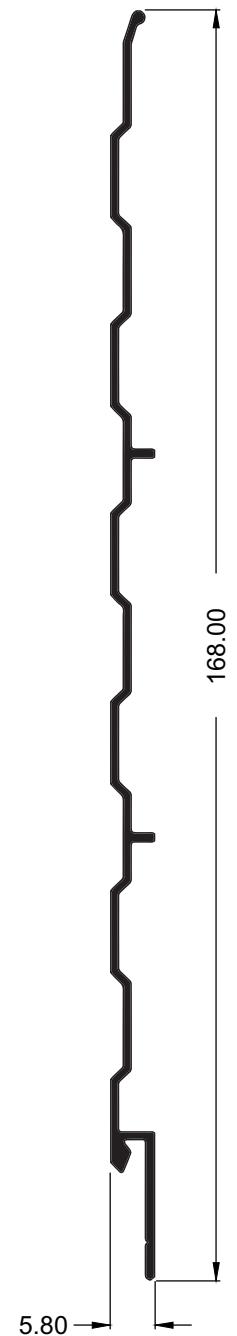
Mer. ----



MAC-0155

0,546 kg/m

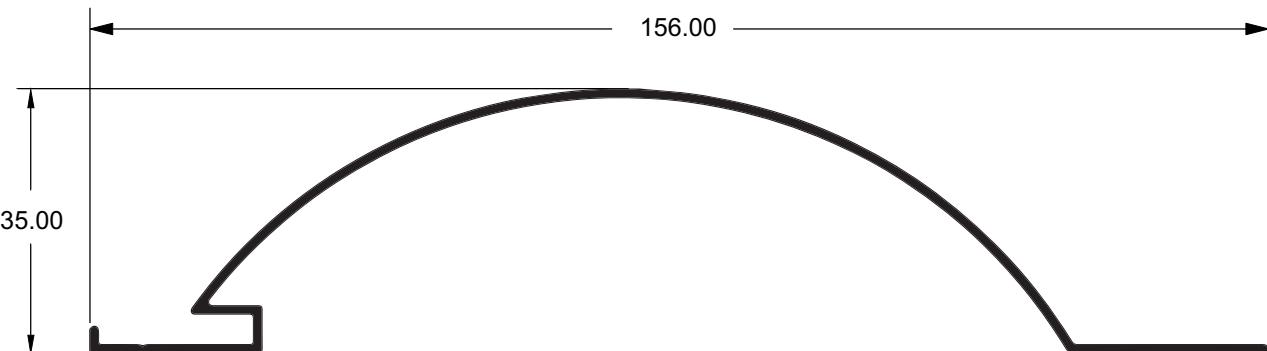
Mer. LB-050



MAC-0156

0,626 kg/m

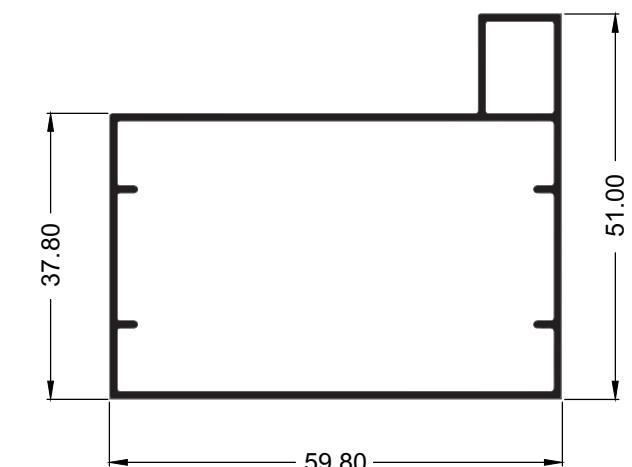
Mer. LB-069 P



MAC-0157

0,642 kg/m

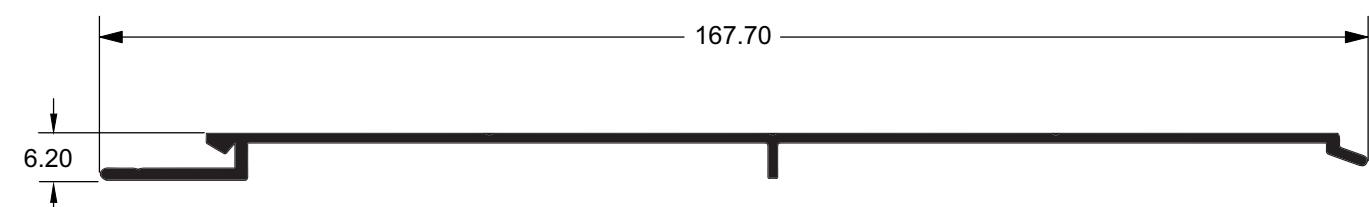
Mer. ----



MAC-0158

0,676 kg/m

Mer. ----

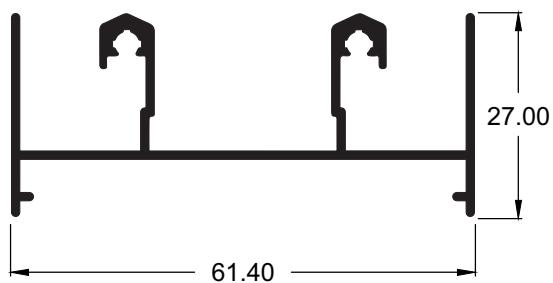


LINHA SMART

MAC-0043

0,626 kg/m

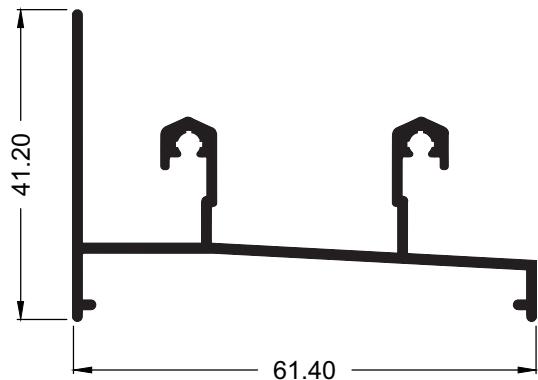
Mer. ----



MAC-0044

0,595 kg/m

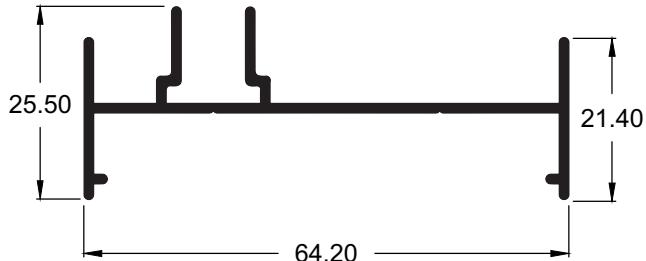
Mer. ----



MAC-0045

0,447 kg/m

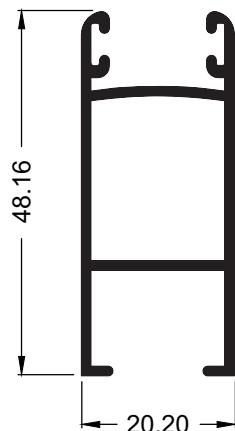
Mer. ----



MAC-0046

0,478 kg/m

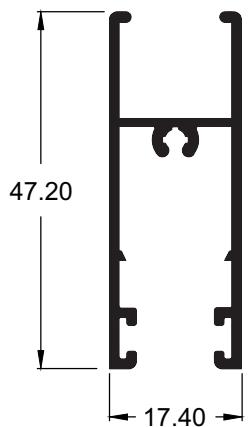
Mer. ----



MAC-0047

0,438 kg/m

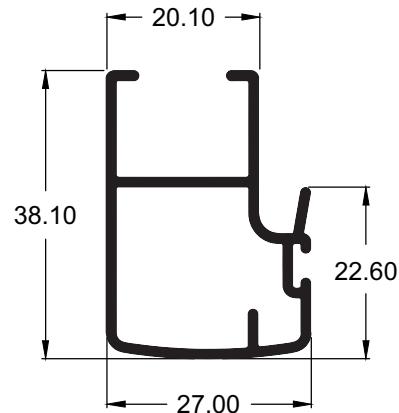
Mer. ----



MAC-0049

0,451 kg/m

Mer. ----

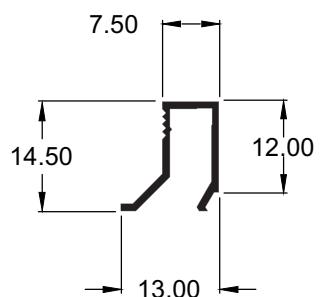


LINHA SUPREMA

MAC-0054

0,106 kg/m

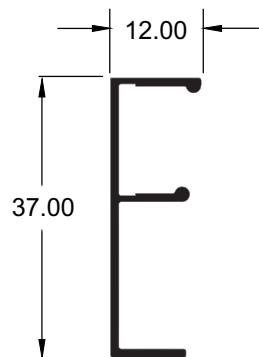
Mer. BG-202



MAC-0066

0,201 kg/m

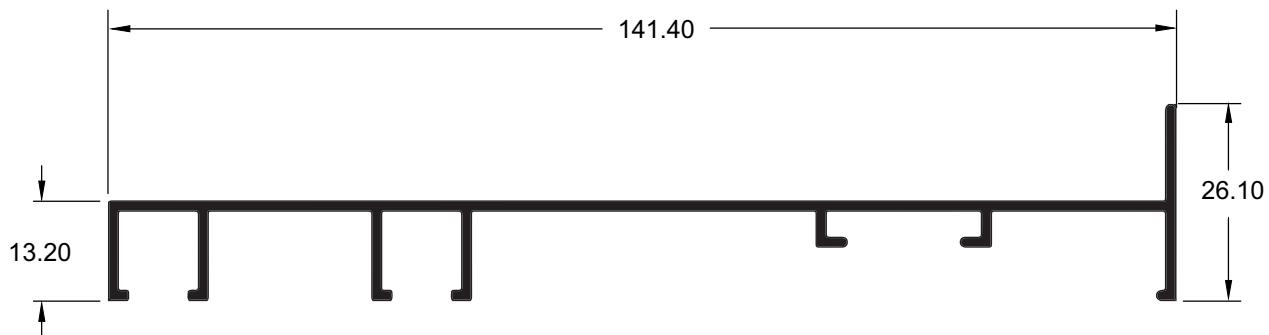
Mer. MP-347



MAC-0141

0,828 kg/m

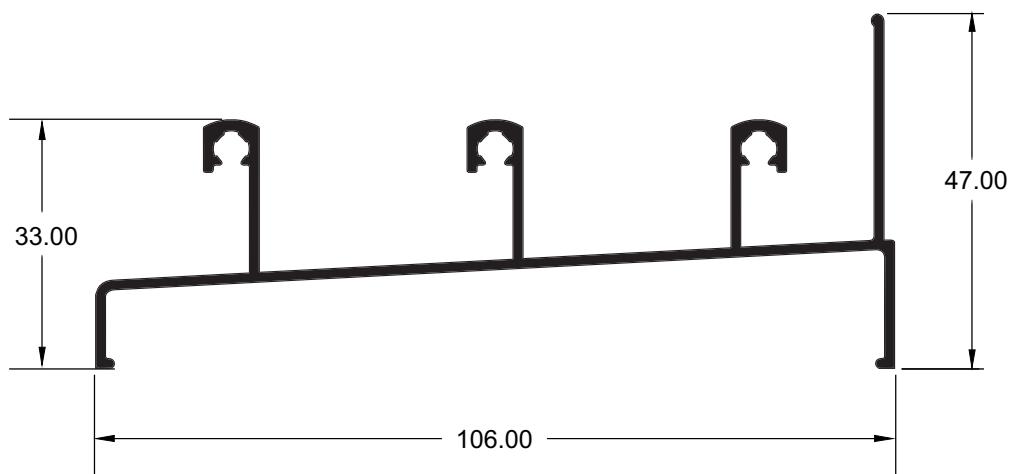
Mer. SU-123



MAC-0142

0,933 kg/m

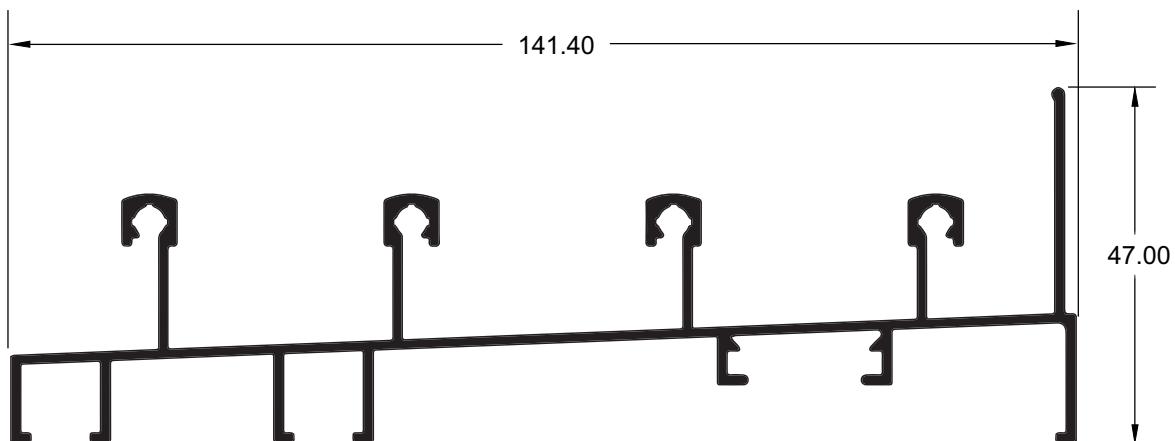
Mer. SU-011



MAC-0143

1,352 kg/m

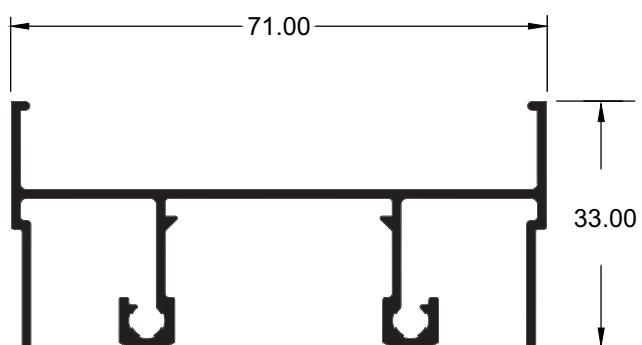
Mer. SU-122



MAC-0144

0,713 kg/m

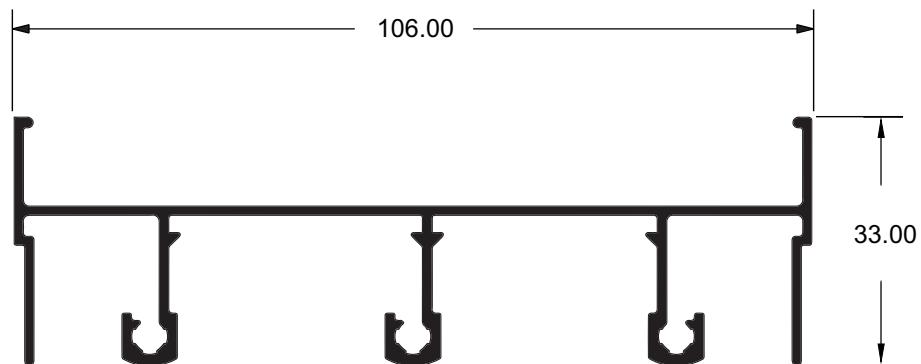
Mer. SU-001



MAC-0145

0,970 kg/m

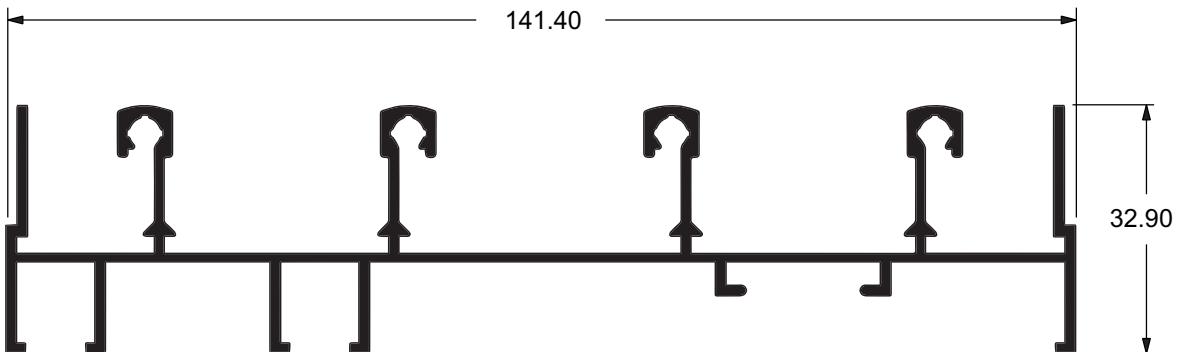
Mer. SU-010



MAC-0146

1,423 kg/m

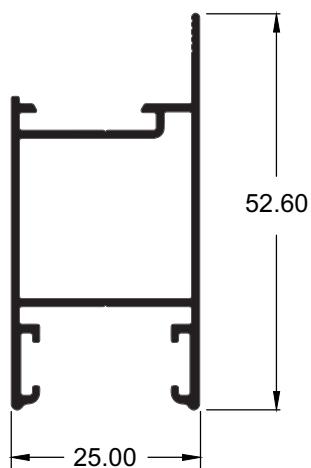
Mer. SU-121



MAC-0147

0,494 kg/m

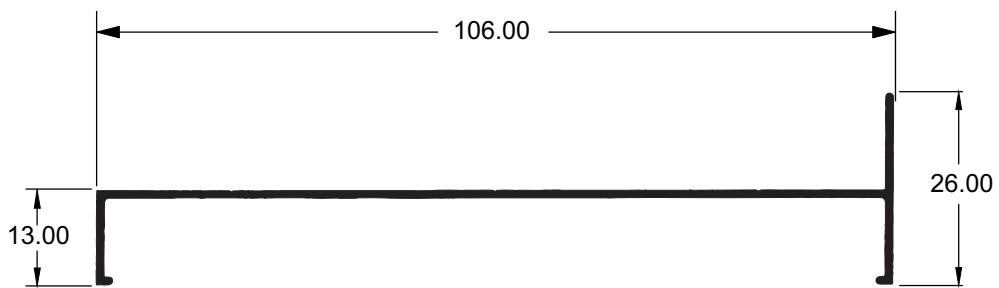
Mer. SU-039



MAC-0148

0,508 kg/m

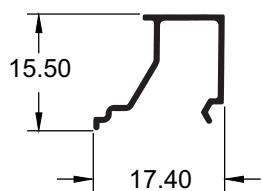
Mer. SU-012



MAC-0149

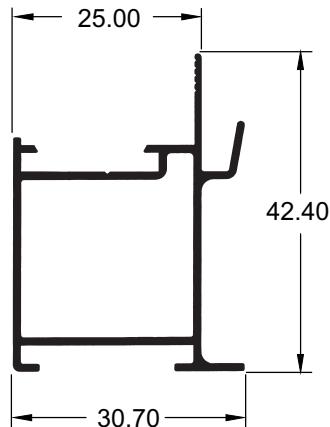
0,110 kg/m

Mer. SU-102

**MAC-0151**

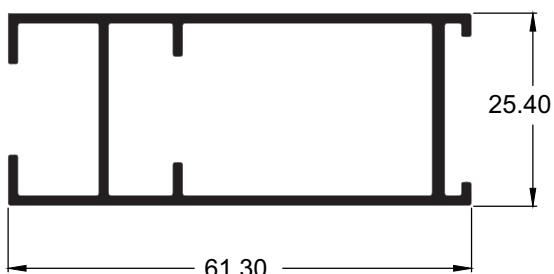
0,452 kg/m

Mer. SU-040

**MAC-0166**

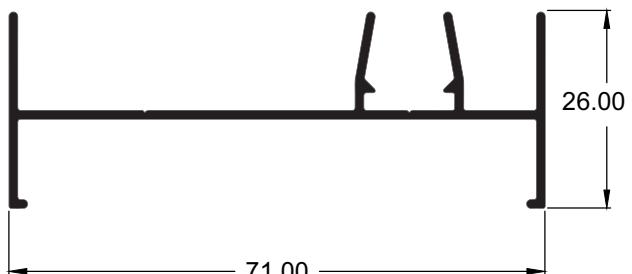
0,699 kg/m

Mer. SU-241

**MAC-0167**

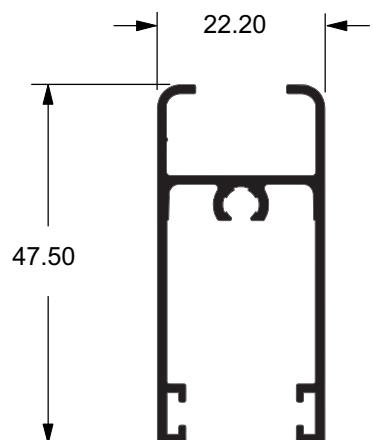
0,492 kg/m

Mer. SU-003

**MAC-0168**

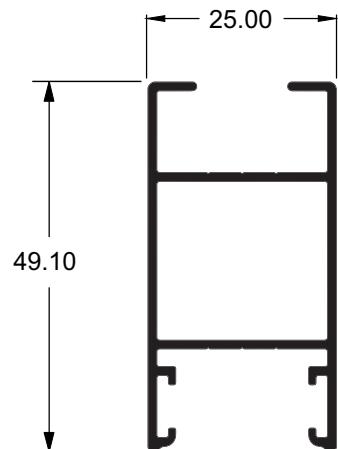
0,507 kg/m

Mer. SU-186

**MAC-0169**

0,543 kg/m

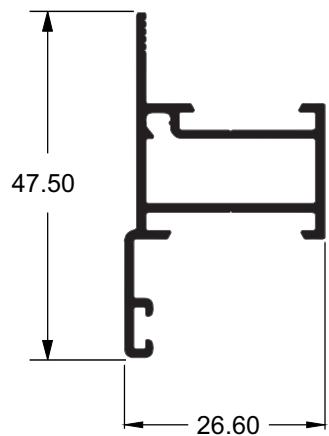
Mer. SU-55



MAC-0170

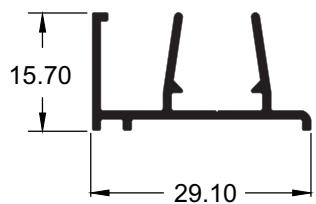
0,443 kg/m

Mer. SU-200

**MAC-0172**

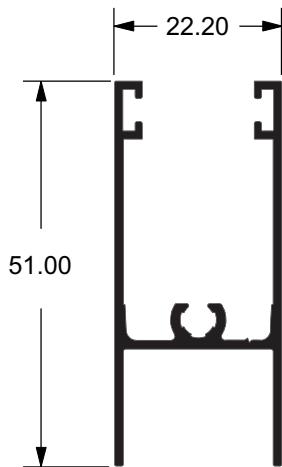
0,247 kg/m

Mer. SU-008

**MAC-0174**

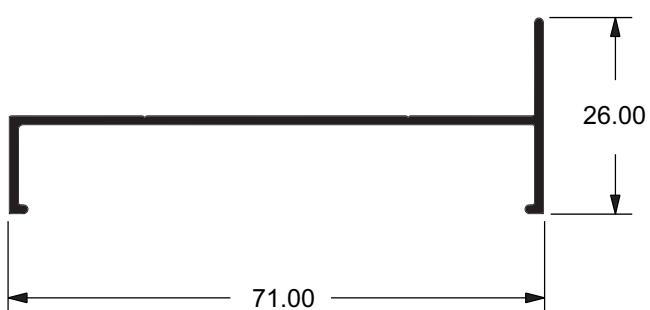
0,492 kg/m

Mer. SU-187

**MAC-0171**

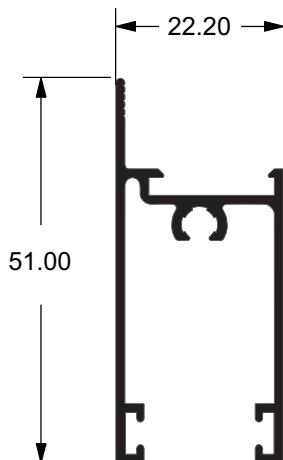
0,357 kg/m

Mer. SU-007

**MAC-0173**

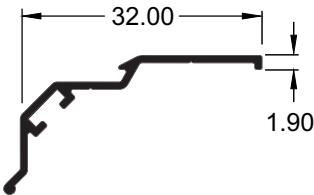
0,469 kg/m

Mer. SU-053

**MAC-0175**

0,144 kg/m

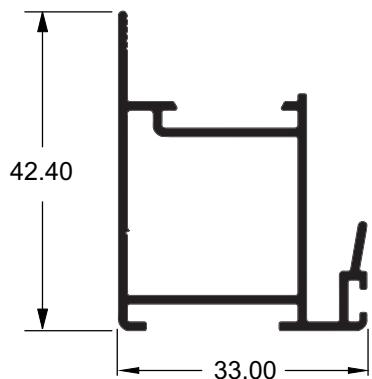
Mer. SU-083



MAC-0176

0,506 kg/m

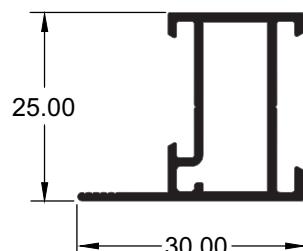
Mer. SU-041



MAC-0177

0,357 kg/m

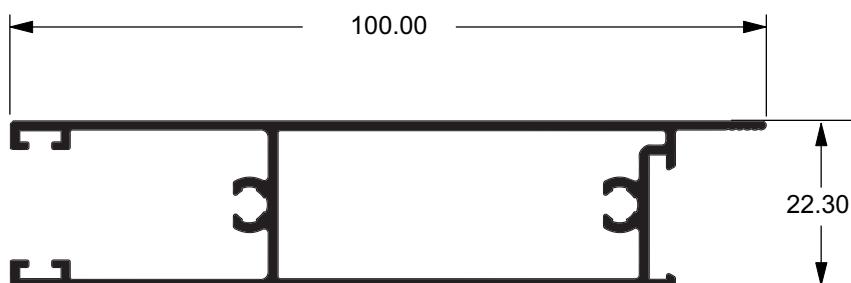
Mer. SU-080



MAC-0178

0,935 kg/m

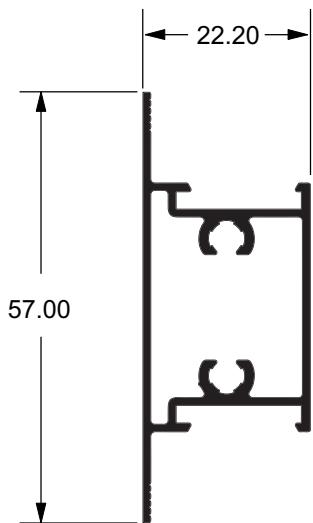
Mer. SU-225



MAC-0179

0,505 kg/m

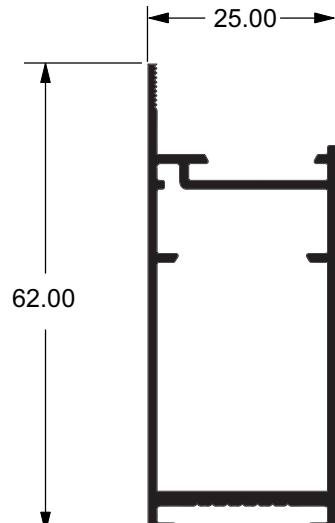
Mer. SU-227



MAC-0180

0,620 kg/m

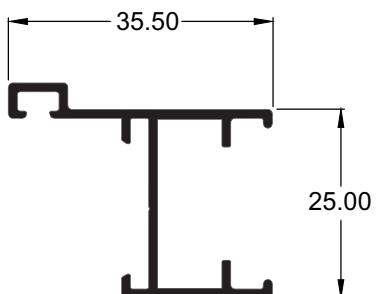
Mer. SU-111



MAC-0181

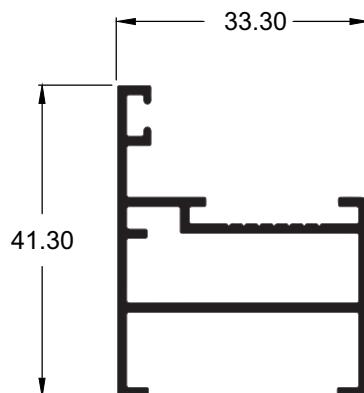
0,331 kg/m

Mer. SU-079

**MAC-0182**

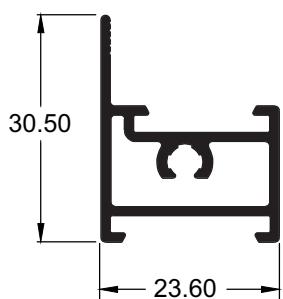
0,540 kg/m

Mer. SU-279

**MAC-0183**

0,379 kg/m

Mer. SU-082

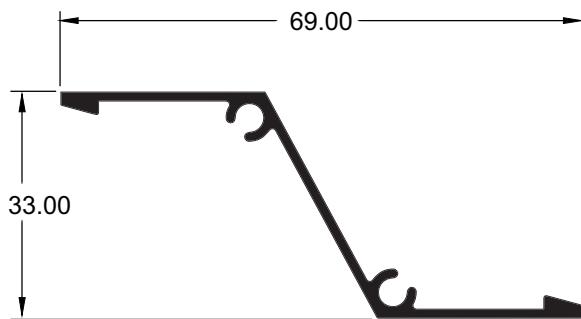


LINHA VENEZIANAS

MAC-0196

0,373 kg/m

Mer. ----



MAC-0281

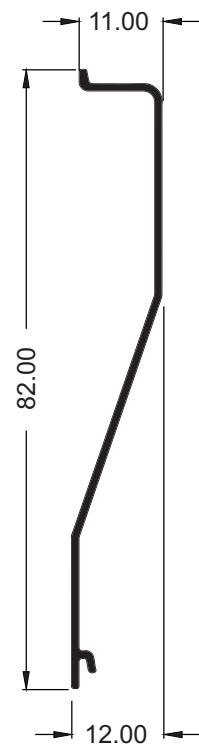
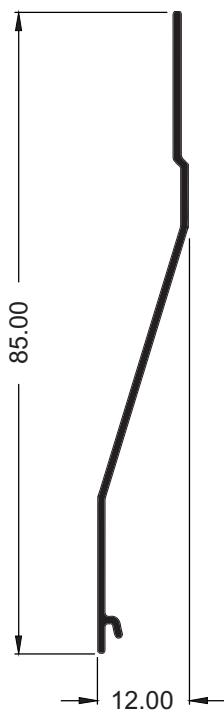
0,250 kg/m

Mer. ----

MAC-0282

0,261 kg/m

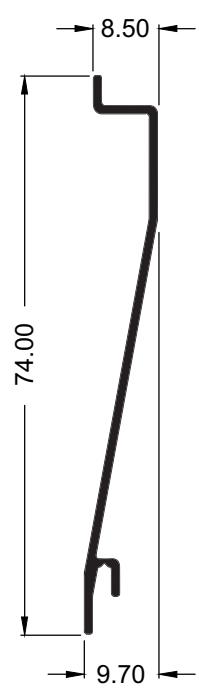
Mer. ----



MAC-0283

0,267 kg/m

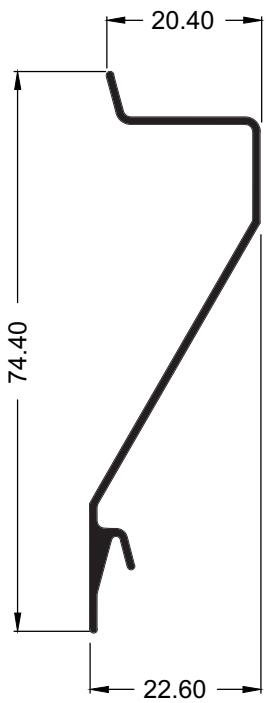
Mer. ----



MAC-0284

0,306 kg/m

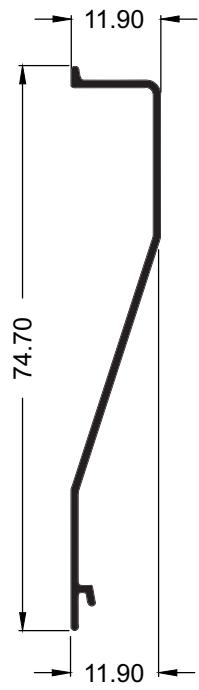
Mer. Z-203



MAC-0285

0,245 kg/m

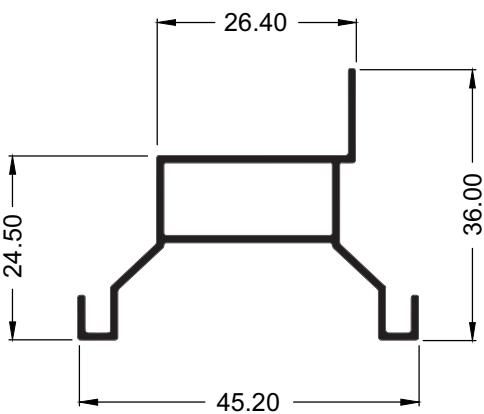
Mer. ----



MAC-0286

0,355 kg/m

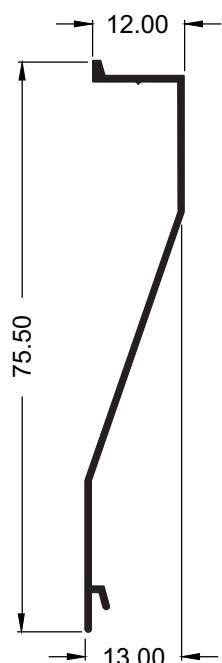
Mer. ----



MAC-0287

0,184 kg/m

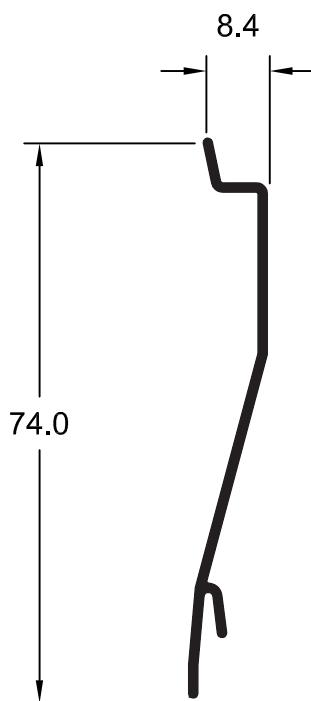
Mer. ----



MAC-0288

0,262 kg/m

Mer. Z-201



MAC-0300

0,254 kg/m

Mer. ----

