2016

Existing Dies Shipbuidling

EXTRUSION

Constellium

amco

Existing Dies

Solid

Hollow

T

I

I special

Flange and T

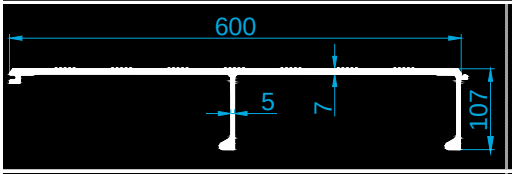
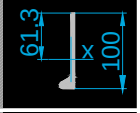
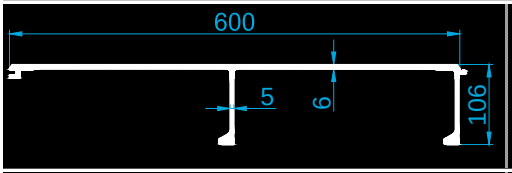
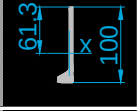
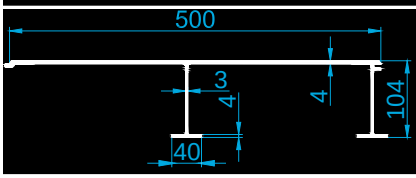
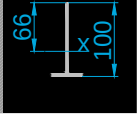
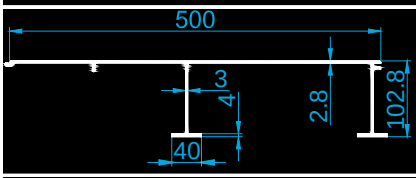
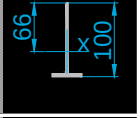
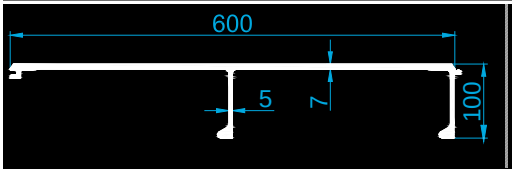
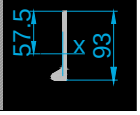
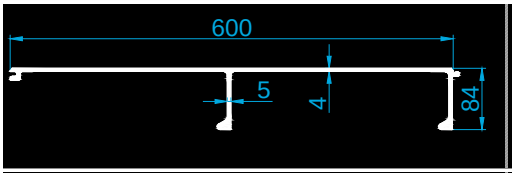
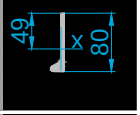
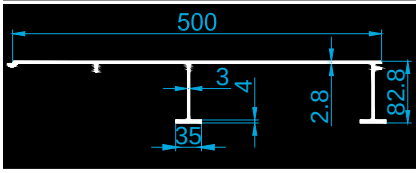
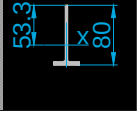
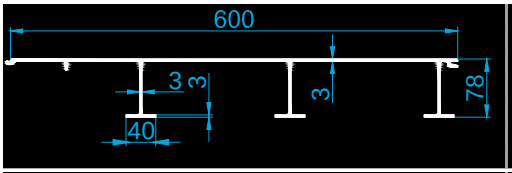
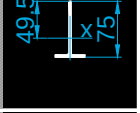
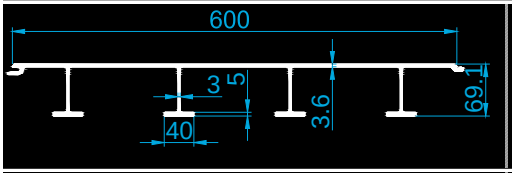
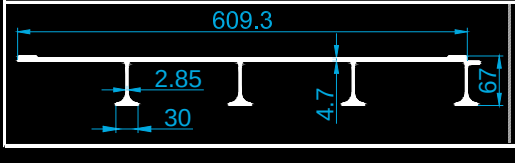
T special

Examples

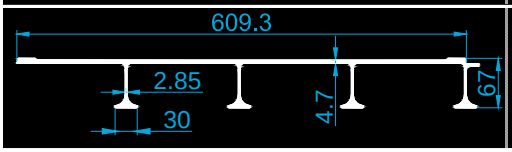
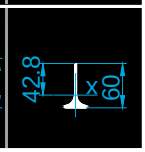
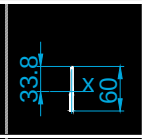
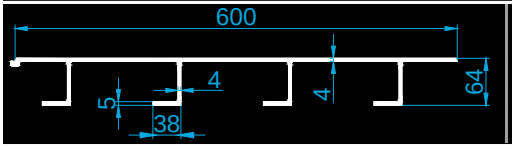
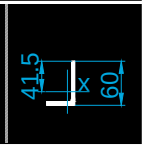
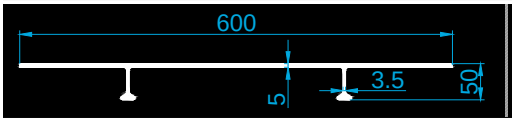
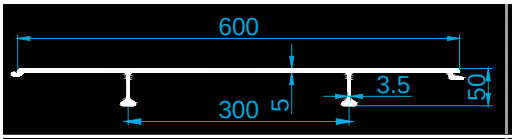
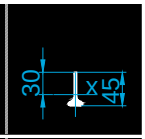
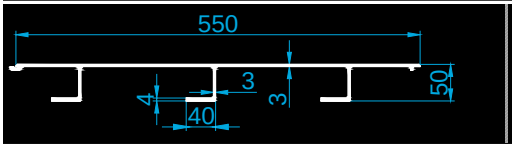
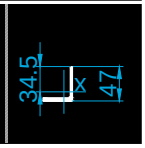
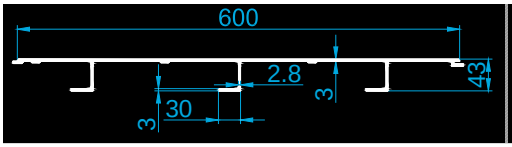
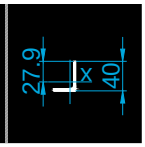
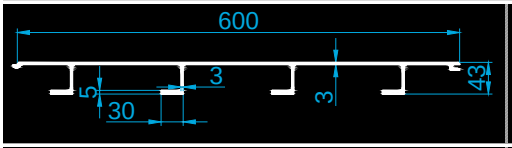
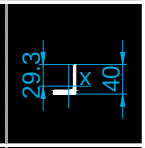
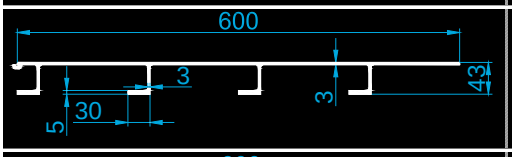
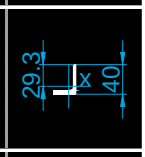
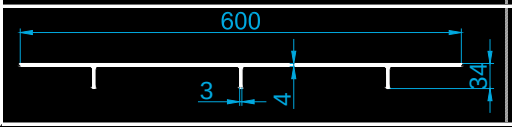
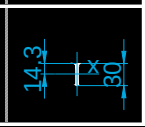
Mecanical properties

Constellium

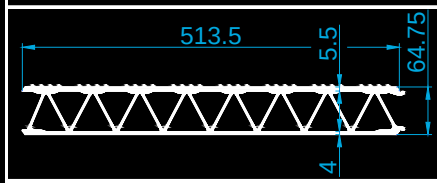
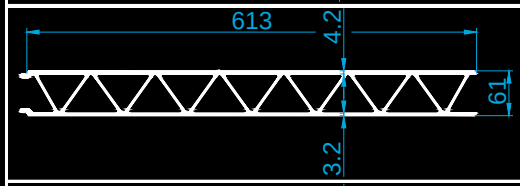
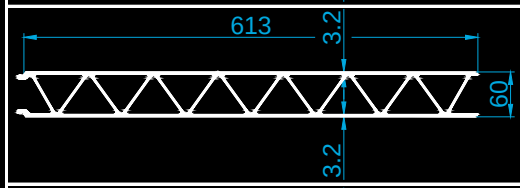
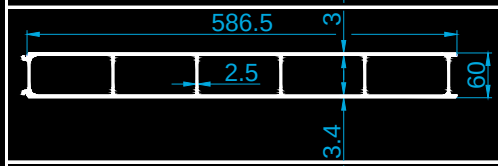
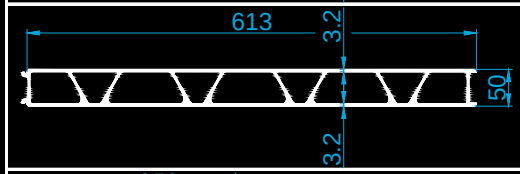
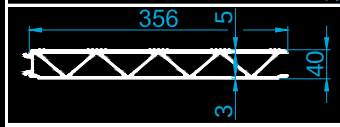
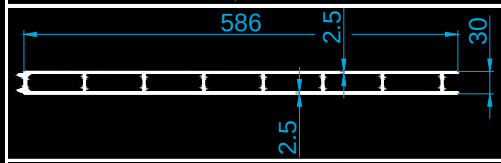
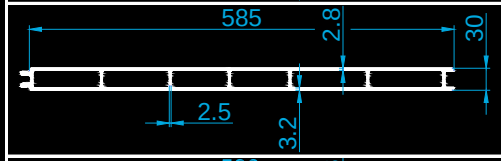
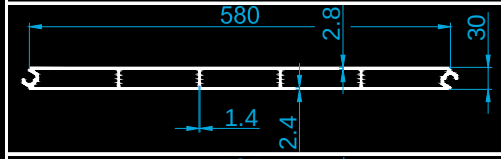
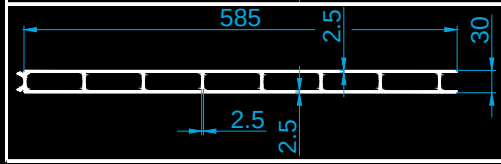
Solid 1/2

Cross section Scale ~1:10	Bulbs	Section Number	Weight kg/m	 kg/m²	I_x cm⁴	W_x cm³	Alloys AA 6060	 6063	 6005A	 6082
		58'870	15.92	26.53	569.3	64.5	✓		✓	✓
		Bulb	*6.76*	-	*66.7*	*10.9*				
		58'871	14.02	23.37	542.7	63.3	✓		✓	✓
		Bulb	*6.76*		*66.7*	*10.9*				
		58'888	8.16	16.31	385.0	47.3	✓		✓	✓
		Bulb	*4.50*		*48.0*	*7.3*				
		58'670	6.57	13.14	349.3	46.0	✓		✓	(✓)
		Bulb	*4.50*		*48.0*	*7.3*				
		59'301	15.46	25.77	476.0	57.7	✓		✓	✓
		Bulb	*6.40*		*54.4*	*9.5*				
		58'873	9.98	16.63	263.5	39.6	✓		✓	✓
		Bulb	*5.42*		*33.9*	*6.9*				
		58'669	6.13	12.26	196.8	31.2	✓		✓	✗
		Bulb	*3.70*		*25.0*	*4.7*				
		58'671	8.04	13.40	231.9	39.5	✓		✓	✗
		Bulb	*3.38*		*20.3*	*4.1*				
		60'471	10.57	17.60	285.5	60.2	✓		✓	✗
		Bulb	*3.88*		*16.6*	*3.5*				
		58'660	12.00	19.71	235.6	48.5	✓		✓	✓
		Bulb	*3.36*		*11.0*	*2.6*				

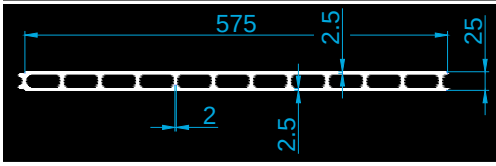
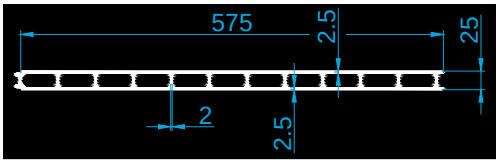
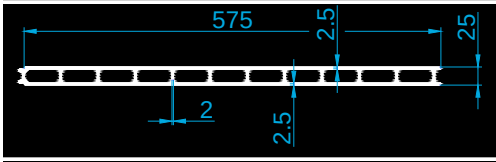
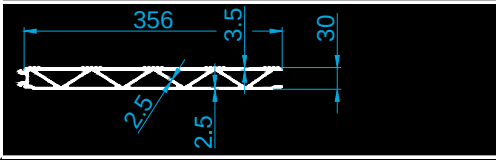
Solid 2/2

Cross section Scale ~1:10	Bulbs	Section Number	Weight kg/m	 kg/m²	I_x cm⁴	W_x cm³	Alloys AA 6060	 6063	 6005A	 6082
		**58'660**	12.00	19.71	235.6	48.5	✓	✓	✓	
		Bulb	*3.36*		*11.0*	*2.6*				
		**58'230**	8.13	13.55	62.7	11.1	✓	✓	✓	
		Bulb	*2.26*		*6.8*	*2.0*				
		**59'623**	11.22	18.70	245.2	55.1	✓	✓	✓	
		Bulb	*4.12*		*14.8*	*3.6*				
		**62'590**	9.61	16.02	57.4	13.4	✓	✓	✓	
		Bulb	*2.60*		*5.0*	*1.7*				
		**58'127**	10.00	16.67	57.6	13.5	✓	✓	✓	
		Bulb	*2.60*		*5.0*	*1.7*				
		**58'426**	7.09	12.90	92.5	25.4	✓	✓	✓	
		Bulb	*2.90*		*6.0*	*1.7*				
		**58'229**	6.96	11.60	47.9	13.9	✓	✓	✓	
		Bulb	*1.95*		*3.1*	*1.1*				
		**58'656**	8.00	13.33	76.9	25.2	✓	✓	✓	
		Bulb	*2.57*		*3.6*	*1.2*				
		**53'026**	7.85	13.08	76.8	25.2	✓	✓	✓	
		Bulb	*2.57*		*3.6*	*1.2*				
		**61'168**	7.27	12.12	9.1	3.0	✓	✓	✗	
		Bulb	*0.75*		*0.7*	*0.5*				

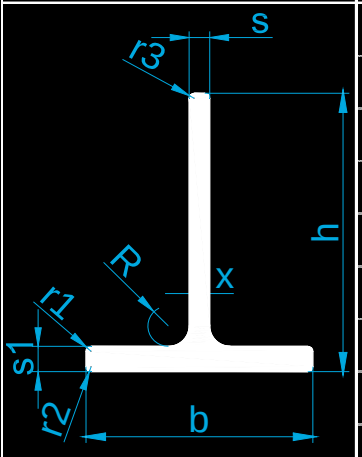
Hollow 1/2

Cross section Scale ~1:10	Section Number	Weight kg/m	 kg/m²	I_x cm⁴	W_x cm³	Alloys AA 6060	 6063	 6005A	 6082
	57'979	22.78	44.50	560.8	152.8	✓		✓	✓
	60'059	19.73	32.19	451.7	139.9	✓		✓	✓
	59'253	18.19	29.67	400.6	133.5	✓		✓	✓
	59'843	12.74	21.73	328.6	104.4	✓		✓	✗
	59'159	15.58	25.41	251.8	96.0	✓		✓	✓
	59'327	11.31	31.77	102.8	45.2	✓		✓	✓
	62'589	9.73	16.61	59.7	39.8	✓		✓	✗
	58'169	11.32	19.35	67.8	47.2	✓		✓	✗
	55'810	9.45	16.30	59.1	37.6	✓		✓	✗
	57'789	9.59	16.41	59.1	39.4	✓		✓	✗

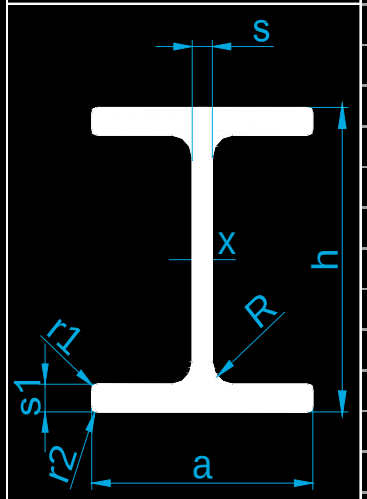
Hollow 2/2

Cross section Scale ~1:10	Section Number	Weight kg/m	 kg/m²	I_x cm⁴	W_x cm³	Alloys AA 6060	 6063	 6005A	 6082
	59'479	9.86	17.15	40.1	32.1	✓	✓	✓	✗
	59'479	9.86	17.15	40.1	32.1	✓	✓	✓	✗
	59'972	9.42	16.38	38.9	31.1	✓	✓	✓	✗
	58'857	9.18	25.79	46.1	28.1	✓	✓	✓	✓

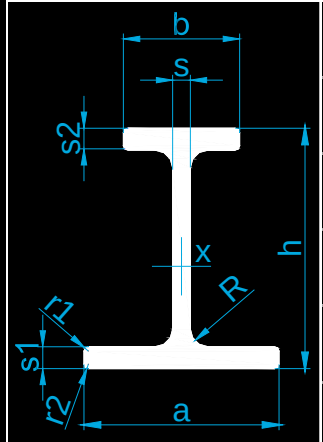
T

Cross section	Section Number	Dimensions h	 b	 s	 s1	 R	 r1	 r2	 r3	Weight kg/m	I_x cm⁴	W_x cm³	Alloys AA 6060	 6063	 6005A	 6082
	54'468	235	170	8	10	8	0	0	0	9.59	1'975.1	116.2	✓	✓	✓	✓
	59692s	238	230	9	24	5	2	2	2	20.27	2'776.9	142.2	✓	✓	✓	✓
	55'014	275	150	9	12	6	1	1	1	11.37	3'305.2	173.1	✓	✓	✓	✓
	55'015	350	100	8	10	6	1	1	1	10.16	4'879.7	224.4	✓	✓	✓	✓
	60'643	350	120	8	10	5	1	1	1	10.69	5'182.1	231.4	✓	✓	✓	✓
	58'568	350	100	5	8	3	0.5	0.5	0.5	6.84	3'337.9	147.1	✓	✓	✓	✓
	58735s	390	150	6	8	6	0.5	0.5	0.5	9.54	5'804.9	224.6	✓	✓	✓	✓
	55'016	450	100	9	10	6	1	1	1	13.53	10'472.0	395.2	✓	✓	✓	✓
	60'641	420	100	8	10	5	1	1	1	11.67	7'996.0	314.2	✓	✓	✓	✓

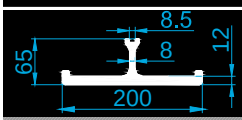
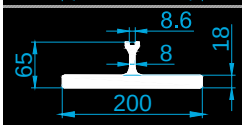
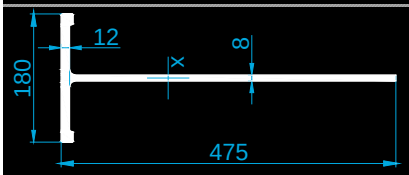
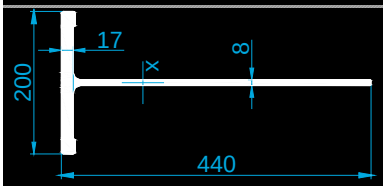
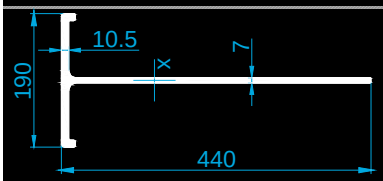
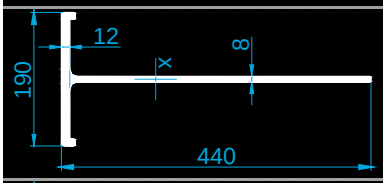
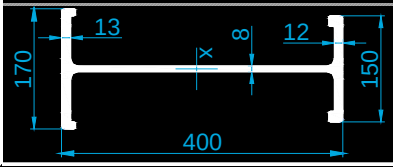
I

Cross section	Section Number	Dimensions h	a	s	s1	R	r1	r2	Weight kg/m	I_x cm^4	W_x cm^3	Alloys AA 6060	6063	6005A	6082
	49'185	200	120	6	8	10			8.46	2'151.2	215.1	✓	✓	✓	
	51'748	200	125	10	10	3	3	3	11.67	2'736.5	273.7	✓	✓	✓	
	31'528	215.9	101.6	7.94	11.1	15	2	2	10.83	3'011.8	279.0	✓	✓	✓	
	46584s	250	250	8	13	12	1	1	22.89	10'031.3	802.5	✓	✓	✓	
	49'552	254	127	11.1	14.28	13.5			17.10	6'466.2	509.1	✓	✓	✓	
	58'758	274	160	6	12	6	3	3	14.57	7'396.4	539.4	✓	✓	✓	
	55285s	300	200	10	10	4	2	2	18.51	10'254.9	683.7	✓	✓	✓	
	59'021	313.4	180	4.2	4.7	6	2	2	8.14	5'068.4	323.4	✓	✓	*	
	59'022	313.4	180	5.2	8.2	6	2	2	12.30	8'056.4	514.3	✓	✓	✓	
	39'999	314.7	140	6	8	6			11.05	6'669.1	423.8	✓	✓	✓	
	39997s	314.7	170	10	15	10			21.85	13'553.2	861.3	✓	✓	✓	
	58'227	320	100	6	10	5			10.40	6'204.4	387.8	✓	✓	✓	
	60850s	400	200	10	16	10	1.5	1.5	27.64	28'029.0	1'401.5	✓	✓	✓	
	58762s	400	200	15	18	10	1	1	34.66	32'585.7	1'629.3	✓	✓	✓	

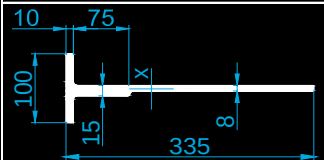
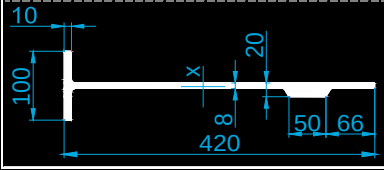
I special

Cross section	Section Number	Dimensions h	a	b	s	s1	s2	R	r1	r2	Weight kg/m	I_x cm^4	W_x cm^3	Alloys AA 6060	6063	6005A	6082
	58'694	300	180	30	6	10	4	4	1	1	9.91	3'662.2	169.9	✓	✓	✓	
	54'929	314	125	80	5	8	8	6	2	2	8.58	4'897.7	280.7	✓	✓	✓	
	58'316	320	140	30	6	12	4	2			9.87	4'211.9	188.0	✓	✓	✓	
	58'886	350	100	30	5	8	4	2	0.5	0.5	7.11	3'831.3	175.7	✓	✓	✓	
	59'309	350	150	30	5	10	4	2	0.5	0.5	8.98	4'695.5	192.4	✓	✓	✓	
	53'864	615	100	25	12	23	5	10	2	2	25.92	38'527.5	1'044.7	✓	✓	✓	

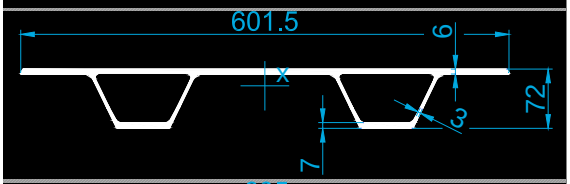
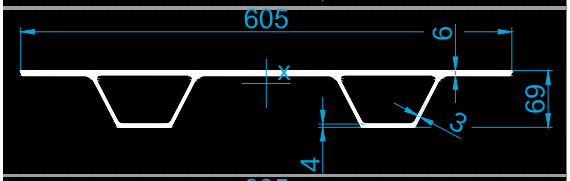
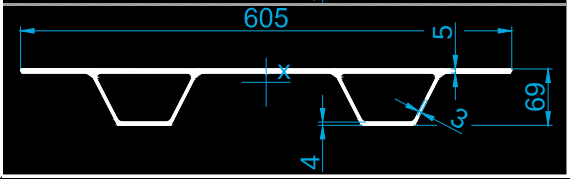
Flange and T

Cross section Scale ~1:10	Section Number	Weight kg/m	I_x cm^4	W_x cm^3	Alloys AA 6060	6063	6005A	6082
	**48'984**	8.42	68.3	13.0	✓		✓	✓
	**50'647**	11.13	69.2	13.3	✓		✓	✓
	**54'535**	16.43	14'657.0	453.8	✓		✓	✓
	**50'648**	18.88	13'405.1	413.7	✓		✓	✓
	**50'379**	14.20	10'741.1	349.1	✓		✓	✓
	**48'983**	16.03	12'120.0	396.2	✓		✓	✓
	**54'930**	20.27	20'017.0	963.1	✓		✓	✓

T special

Cross section Scale ~1:10	Section Number	Weight kg/m	I_x cm^4	W_x cm^3	Alloys AA 6060	6063	6005A	6082
	**60'637**	11.28	4'632.3	211.1	✓		✓	✓
	**60'639**	15.53	9'588.9	413.3	✓		✓	✓

Examples

Cross section Scale ~1:10	Section Number	Weight kg/m	 kg/m²	I_x cm⁴	W_x cm³	Alloys AA 6060 6063	 6005A	 6082
	60'423	14.22		375.2	72.3	✓	✓	✓
	59'156	13.06	21.58	254.8	47.7	✓	✓	✓
	59'917	12.13	20.05	250.9	47.6	✓	✓	✓

Mecanical properties

Mecanicals properties of aluminium sections

Alloy designation			Temper		Thickness	Tensile strenght (min.) EN 755-2	Proof stress (min.) EN 755-2	Elongation (min.) EN 755-2
AA Reg. No	EN 573-3		DIN	AA	*[mm]*	R_m *[Mpa]* longit.	$R_p0.2$ *[Mpa]* longit.	A_5 *[%]* longit.
6060	EN 6060	AlMgSi0.5	F22	T66	< 3	215	160	8
					3-25	195	150	
6063	EN 6063	AlMgSi0.5	F25	T66	>10	245	200	8
6005A	EN 6005A	AlMgSi0.7	$F27_{(1)}$	T6	< 5	270	225	8
					5-10	260	215	
			$F26_{(2)}$		< 5	255	215	8
					5-10	250	200	
6106	EN 6106	AlMgSiMn	F25	T6	>10	250	200	8
6082	EN 6082	AlMgSi1	F29	T6	< 5	290	250	10
			F31	T6	5-15	310	260	
5754	EN 5754	AlMg3	F18	F	all	180	80	14
5454	EN 5454	AlMg2.7Mn	F22	F	all	200	85	16
5083	EN 5083	AlMg4.5Mn	F27	F	all	270	110	12

$_{(1)}$ for solid extrusions $_{(2)}$ for hollow extrusions

Mecanicals properties of aluminium butt welds (MIG welded)

Alloy designation			Temper		Thickness	Heat affectied zone Tensile strenght (min.) DIN 50123	Proof stress (min.) DIN 50123
AA Reg. No	EN 573-3		DIN	AA	*[mm]*	R_m *[Mpa]*	$R_p0.2$ *[Mpa]*
6060	EN 6060	AlMgSi0.5	F22	T66	< 3	95	65
					3-25		
6063	EN 6063	AlMgSi0.5	F25	T66	> 10	95	65
6005A	EN 6005A	AlMgSi0.7	$F27_{(1)}$	T6	< 5	165	115
					5-10		
			$F26_{(2)}$		< 5		
					5-10		
6106	EN 6106	AlMgSiMn	F25	T6	> 10	160	115
6082	EN 6082	AlMgSi1	F29	T6	< 5	185	115
			F31	T6	5-15		
5754	EN 5754	AlMg3	F18	F	all	190	80
5454	EN 5454	AlMg2.7Mn	F22	F	all	190	80
5083	EN 5083	AlMg4.5Mn	F27	F	all	275	125

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