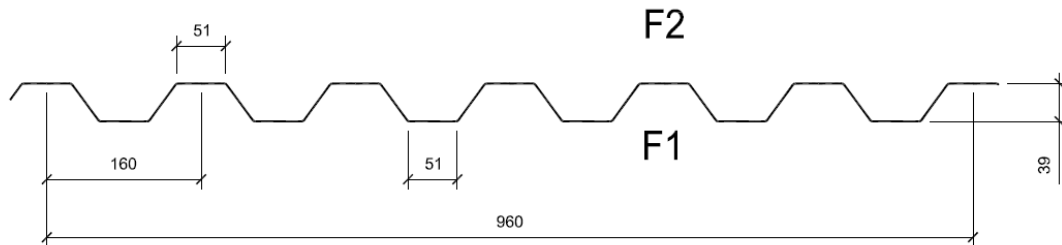


TECHNICAL DATA SHEET
OF PROFILE
TR 40S/160

TR 40S/160



Technical parameters:

Coil width:	1250mm
Profile width:	960mm
Yield strength:	S280GD, S320GD, according to EN 10346
Thickness:	0.55; 0.63; 0.75; 0.88; 1.00; 1.25mm; according to EN 10143
Durability/Coating quality:	Z100, Z140, Z200, Z225, Z275, Z350, AZ150, AZ185, 1.4526, 1.4301, 1.4404, according to EN 10346
Organic coating:	Interieur (DU912, DU901), Hairplus, Hairultra, Hairflon, Keyron, Hairexcel, Sinea, according to EN 10169
Max. length:	12m
Min. length:	2m



Product is in conformity with the provisions of EC Directive 89/106/EEC (Construction Products Directive) and that the harmonized standard referenced below has been applied:
EN 14782:2006 or EN 1090-1:2009 + A1:2011, EN1090-2:2008 + A1:2011

Tables of resistance of profiled sheeting ArcelorMittal

For all profiles, steel S320 is used. Material characteristics are as follows:

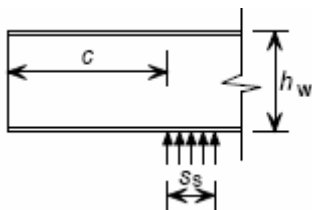
- yield strength $f_y = 320$ MPa
- proof strength $f_u = 390$ MPa
- modulus of elasticity $E = 210\,000$ MPa
- density 7850 kg/m³

The design thickness of the sheet given in the tables is the core thickness only. No coatings or paintings are included neither in the thickness nor in the calculated weight of the profiled sheeting. Minus tolerance in the sheet thickness is lower than 5 %.

The design resistances are calculated for uniformly loaded simply supported or continuous beams (where the spans are also uniform).

Ultimate limit state (ULS)

The design resistance according to the ultimate limit state is given by " q_{Ed} " which is calculated with respect to the bending resistance, shear resistance, local transverse forces and their interactions as defined in CSN EN 1993-1-3 and other referenced codes. The width of the end support s_s is 40 mm and 120 mm for the internal support respectively. In the tables, two different resistances are given according to the distance " c " (see figure below the paragraph) from the end support to the free end. One resistance " $q_{Ed} (c < 1,5h)$ " is for profiles which meets the minimal distance of the overhang " c " at least 40 mm. For the second resistance " $q_{Ed} (c \geq 1,5h)$ ", the distance at least $1.5 \times h_w$ (web height) clear from a free end is considered.



The real design load must be always smaller or at least equal to the resistance given in the tables. The maximal design resistances (load values) in the tables are related to a one meter width of the profiled sheeting. Units used in the tables are kN/m². The self weight of the sheeting must be included in the load.

Serviceability limit state (SLS)

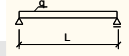
The characteristic load " q_{Ek} " that meets the serviceability limit for deflection of $L/200$ (where L means the span) is given in the table. In view of the fact that the behaviour in the SLS is elastic, characteristic load for different limits may be extrapolated from the table. To fulfil the condition of the limit, the real characteristic load must be lower or at least equal to the value given by the tables.

Used design codes:

ČSN EN 1993-1-1: Navrhování ocelových konstrukcí, Část 1-1: Obecná pravidla a pravidla pro pozemní stavby, ČNI, 2006. (Design of steel structures, Part 1-1: General rules and rules for buildings)

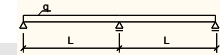
ČSN EN 1993-1-3: Navrhování ocelových konstrukcí, Část 1-3: Obecná pravidla – Doplnující pravidla pro tenkostěnné za studena tvarované prvky a plošné profily, ČNI, 2008. (Design of steel structures, Part 1-3: General rules - Supplementary rules for cold-formed members and sheeting)

ČSN EN 1993-1-5: Navrhování ocelových konstrukcí, Část 1-5: Boulení stěn, ČNI, 2008. (Design of steel structures, Part 1-5: Plated structural elements)



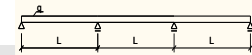
single span beam - symmetrical profile

TR40S/160	t [mm]	span L [m]																	
		1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00	
0.55	qEd (c<1.5h)	10,57	8,46	6,74	4,95	3,79	2,99	2,43	2,00	1,68	1,44	1,24	1,08	0,95	0,84	0,75	0,67	0,61	
	qEd (c≥1.5h)	15,16	9,70	6,74	4,95	3,79	2,99	2,43	2,00	1,68	1,44	1,24	1,08	0,95	0,84	0,75	0,67	0,61	
	qEd (δ≤L/200)	11,11	5,69	3,29	2,07	1,39	0,98	0,71	0,53	0,41	0,32	0,26	0,21	0,17	0,14	0,12	0,10	0,09	
0.63	qEd (c<1.5h)	13,67	10,93	8,31	6,11	4,68	3,69	2,99	2,47	2,08	1,77	1,53	1,33	1,17	1,04	0,92	0,83	0,75	
	qEd (c≥1.5h)	18,70	11,97	8,31	6,11	4,68	3,69	2,99	2,47	2,08	1,77	1,53	1,33	1,17	1,04	0,92	0,83	0,75	
	qEd (δ≤L/200)	13,37	6,84	3,96	2,49	1,67	1,17	0,86	0,64	0,50	0,39	0,31	0,25	0,21	0,17	0,15	0,12	0,11	
0.75	qEd (c<1.5h)	18,99	15,19	10,59	7,78	5,95	4,70	3,81	3,15	2,65	2,25	1,94	1,69	1,49	1,32	1,18	1,18	0,95	
	qEd (c≥1.5h)	23,82	15,24	10,59	7,78	5,95	4,70	3,81	3,15	2,65	2,25	1,94	1,69	1,49	1,32	1,18	1,18	0,95	
	qEd (δ≤L/200)	16,68	8,54	4,94	3,11	2,08	1,46	1,07	0,80	0,62	0,49	0,39	0,32	0,26	0,22	0,18	0,18	0,13	
0.88	qEd (c<1.5h)	25,65	19,04	13,22	9,71	7,44	5,88	4,76	3,93	3,31	2,82	2,43	2,12	1,86	1,65	1,47	1,32	1,19	
	qEd (c≥1.5h)	29,75	19,04	13,22	9,71	7,44	5,88	4,76	3,93	3,31	2,82	2,43	2,12	1,86	1,65	1,47	1,32	1,19	
	qEd (δ≤L/200)	20,43	10,46	6,05	3,81	2,55	1,79	1,31	0,98	0,76	0,60	0,48	0,39	0,32	0,27	0,22	0,19	0,16	
1.00	qEd (c<1.5h)	32,62	22,74	15,79	11,60	8,88	7,02	5,68	4,70	3,95	3,36	2,90	2,53	2,22	1,97	1,75	1,57	1,42	
	qEd (c≥1.5h)	35,53	22,74	15,79	11,60	8,88	7,02	5,68	4,70	3,95	3,36	2,90	2,53	2,22	1,97	1,75	1,57	1,42	
	qEd (δ≤L/200)	24,01	12,29	7,11	4,48	3,00	2,11	1,54	1,15	0,89	0,70	0,56	0,46	0,38	0,31	0,26	0,22	0,19	
1.25	qEd (c<1.5h)	48,23	30,87	21,43	15,75	12,06	9,53	7,72	6,38	5,36	4,57	3,94	3,43	3,01	2,67	2,38	2,14	1,93	
	qEd (c≥1.5h)	48,23	30,87	21,43	15,75	12,06	9,53	7,72	6,38	5,36	4,57	3,94	3,43	3,01	2,67	2,38	2,14	1,93	
	qEd (δ≤L/200)	31,73	16,24	9,40	5,92	3,97	2,79	2,03	1,53	1,18	0,92	0,74	0,60	0,50	0,41	0,35	0,30	0,25	



two-span beam - symmetrical profile

TR40S/160	t [mm]	span L [m]																	
		1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00	
0.55	qEd (c<1.5h)	10,74	7,53	5,58	4,31	3,43	2,79	2,32	1,96	1,68	1,44	1,24	1,08	0,95	0,84	0,75	0,67	0,61	
	qEd (c≥1.5h)	10,74	7,53	5,58	4,31	3,43	2,79	2,32	1,96	1,68	1,44	1,24	1,08	0,95	0,84	0,75	0,67	0,61	
	qEd (δ≤L/200)	27,48	14,07	8,14	5,13	3,44	2,41	1,76	1,32	1,02	0,80	0,64	0,52	0,43	0,36	0,30	0,26	0,22	
0.63	qEd (c<1.5h)	13,42	9,39	6,95	5,36	4,26	3,47	2,88	2,43	2,08	1,77	1,53	1,33	1,17	1,04	0,92	0,83	0,75	
	qEd (c≥1.5h)	13,42	9,39	6,95	5,36	4,26	3,47	2,88	2,43	2,08	1,77	1,53	1,33	1,17	1,04	0,92	0,83	0,75	
	qEd (δ≤L/200)	33,07	16,93	9,80	6,17	4,13	2,90	2,12	1,59	1,22	0,96	0,77	0,63	0,52	0,43	0,36	0,31	0,26	
0.75	qEd (c<1.5h)	17,55	12,24	9,04	6,95	5,52	4,49	3,73	3,14	2,65	2,25	1,94	1,69	1,49	1,32	1,18	1,18	0,95	
	qEd (c≥1.5h)	17,55	12,24	9,04	6,95	5,52	4,49	3,73	3,14	2,65	2,25	1,94	1,69	1,49	1,32	1,18	1,18	0,95	
	qEd (δ≤L/200)	41,26	21,12	12,22	7,70	5,16	3,62	2,64	1,98	1,53	1,20	0,96	0,78	0,64	0,54	0,45	0,45	0,33	
0.88	qEd (c<1.5h)	22,43	15,59	11,49	8,82	7,00	5,68	4,71	3,93	3,31	2,82	2,43	2,12	1,86	1,65	1,47	1,32	1,19	
	qEd (c≥1.5h)	22,43	15,59	11,49	8,82	7,00	5,68	4,71	3,93	3,31	2,82	2,43	2,12	1,86	1,65	1,47	1,32	1,19	
	qEd (δ≤L/200)	50,54	25,88	14,97	9,43	6,32	4,44	3,23	2,43	1,87	1,47	1,18	0,96	0,79	0,66	0,55	0,47	0,40	
1.00	qEd (c<1.5h)	27,26	18,91	13,90	10,67	8,45	6,86	5,68	4,70	3,95	3,36	2,90	2,53	2,22	1,97	1,75	1,57	1,42	
	qEd (c≥1.5h)	27,26	18,91	13,90	10,67	8,45	6,86	5,68	4,70	3,95	3,36	2,90	2,53	2,22	1,97	1,75	1,57	1,42	
	qEd (δ≤L/200)	59,40	30,41	17,60	11,08	7,42	5,21	3,80	2,86	2,20	1,73	1,39	1,13	0,93	0,77	0,65	0,55	0,48	
1.25	qEd (c<1.5h)	38,15	26,35	19,32	14,78	11,68	9,47	7,72	6,38	5,36	4,57	3,94	3,43	3,01	2,67	2,38	2,14	1,93	
	qEd (c≥1.5h)	38,15	26,35	19,32	14,78	11,68	9,47	7,72	6,38	5,36	4,57	3,94	3,43	3,01	2,67	2,38	2,14	1,93	
	qEd (δ≤L/200)	78,49	40,19	23,26	14,65	9,81	6,89	5,02	3,77	2,91	2,29	1,83	1,49	1,23	1,02	0,86	0,73	0,63	



three-span beam - symmetrical profile

TR40S/160	t [mm]	span L [m]																	
		1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00	
0.55	qEd (c<1.5h)	12,87	9,07	6,75	5,23	4,17	3,41	2,84	2,40	2,06	1,78	1,55	1,35	1,18	1,05	0,94	0,84	0,76	
	qEd (c≥1.5h)	12,87	9,07	6,75	5,23	4,17	3,41	2,84	2,40	2,06	1,78	1,55	1,35	1,18	1,05	0,94	0,84	0,76	
	qEd (δ≤L/200)	21,36	10,94	6,33	3,99	2,67	1,88	1,37	1,03	0,79	0,62	0,50	0,41	0,33	0,28	0,23	0,20	0,17	
0.63	qEd (c<1.5h)	16,09	11,31	8,41	6,51	5,19	4,24	3,52	2,98	2,55	2,21	1,91	1,66	1,46	1,29	1,15	1,04	0,94	
	qEd (c≥1.5h)	16,09	11,31	8,41	6,51	5,19	4,24	3,52	2,98	2,55	2,21	1,91	1,66	1,46	1,29	1,15	1,04	0,94	
	qEd (δ≤L/200)	25,70	13,16	7,62	4,80	3,21	2,26	1,65	1,24	0,95	0,75	0,60	0,49	0,40	0,33	0,28	0,24	0,21	
0.75	qEd (c<1.5h)	21,07	14,77	10,95	8,45	6,73	5,48	4,56	3,85	3,29	2,82	2,43	2,12	1,86	1,65	1,47	1,47	1,19	
	qEd (c≥1.5h)	21,07	14,77	10,95	8,45	6,73	5,48	4,56	3,85	3,29	2,82	2,43	2,12	1,86	1,65	1,47	1,47	1,19	
	qEd (δ≤L/200)	32,07	16,42	9,50	5,98	4,01	2,82	2,05	1,54	1,19	0,93	0,75	0,61	0,50	0,42	0,35	0,35	0,26	
0.88	qEd (c<1.5h)	26,97	18,84	13,94	10,74	8,53	6,95	5,77	4,87	4,13	3,52	3,04	2,64	2,32	2,06	1,84	1,65	1,49	
	qEd (c≥1.5h)	26,97	18,84	13,94	10,74	8,53	6,95	5,77	4,87	4,13	3,52	3,04	2,64	2,32	2,06	1,84	1,65	1,49	
	qEd (δ≤L/200)	39,29	20,11	11,64	7,33	4,91	3,45	2,51	1,89	1,46	1,14	0,92	0,74	0,61	0,51	0,43	0,37	0,31	
1.00	qEd (c<1.5h)	32,81	22,87	16,88	12,99	10,31	8,39	6,96	5,86	4,93	4,20	3,63	3,16	2,78	2,46	2,19	1,97	1,78	
	qEd (c≥1.5h)	32,81	22,87	16,88	12,99	10,31	8,39	6,96	5,86	4,93	4,20	3,63	3,16	2,78	2,46	2,19	1,97	1,78	
	qEd (δ≤L/200)	46,17	23,64	13,68	8,62	5,77	4,05	2,96	2,22	1,71	1,35	1,08	0,88	0,72	0,60	0,51	0,43	0,37	
1.25	qEd (c<1.5h)	46,00	31,93	23,50	18,03	14,28	11,60	9,61	7,97	6,70	5,71	4,92	4,29	3,77	3,34	2,98	2,67	2,41	
	qEd (c≥1.5h)	46,00	31,93	23,50	18,03	14,28	11,60	9,61	7,97	6,70	5,71	4,92	4,29	3,77	3,34	2,98	2,67	2,41	
	qEd (δ≤L/200)	61,01	31,24	18,08	11,38	7,63	5,36	3,90	2,93	2,26	1,78	1,42	1,16	0,95	0,79	0,67	0,57	0,49	

Explanatory note:

- qEd (c<1.5h) design resistance end support width at least 40 mm, end support at distance at least 40 mm clear from a free end [kNm²] internal support width at least 120 mm
- qEd (c≥1.5h) design resistance end support width at least 40 mm, end support at distance at least 1.5 x h_w (web height) clear from a free end [kNm²] internal support width at least 120 mm
- qEd (δ≤L/200) characteristics load that meets the serviceability limit for deflection of L/200 [kNm²]