



Corus

Advance[®] section properties for Students

Structural sections

A decorative graphic element at the bottom of the page, consisting of a horizontal bar with a metallic, brushed metal texture. The bar has a slight 3D effect with shadows on the top and bottom edges. The word "Advance" is embossed in the center of the bar in a large, white, sans-serif font.

Advance

'The blue book'

A copy of the full interactive blue book for Advance® sections is available for download from www.corusconstruction.com

This essential tool for steel designers, presents section properties and member capacities in tabular form to BS 5950 -1 : 2000, and includes:

- Tolerances
- Section properties
- Axial tension
- Axial compression
- Bending moment
- Axial and bending
- Web bearing and buckling
- Effective section properties

Note: If you have not already done so, you may need to register with www.corusconstruction.com to download the software.

The screenshot shows the 'The blue book' software interface. The main window displays a table of dimensions and properties for Advance UKB sections. The table is organized into two columns: 'DIMENSIONS' and 'PROPERTY'. The 'DIMENSIONS' column includes fields for Section Designation, Mass per Metre, Depth, Width, Thickness, Flange, Root Radius, Depth, Flange, Local Buckling, Second Moment of Area, and Section Size. The 'PROPERTY' column includes fields for Section Designation, Radius of Gyration, Elastic Modulus, Plastic Modulus, and Built-up Parameter. The table lists various section sizes such as 1016 x 305 x 407, 1016 x 305 x 437, 1016 x 305 x 380, 1016 x 305 x 340, 1016 x 305 x 314, 1016 x 305 x 272, 1016 x 305 x 240, 1016 x 305 x 222, 914 x 419 x 380, 914 x 419 x 343, 914 x 305 x 289, 914 x 305 x 253, 914 x 305 x 224, 914 x 305 x 201, 838 x 292 x 226, 838 x 292 x 194, 838 x 292 x 176, 762 x 287 x 197, and 762 x 287 x 173. The table also includes a diagram of a section with dimensions labeled.

Section Designation		Mass per Metre	Depth	Width	Thickness	Flange	Root Radius	Depth	Flange	Local Buckling	Second Moment of Area	Section Designation	Radius of Gyration	Elastic Modulus	Plastic Modulus	Built-up Parameter			
mm	kg/m	mm	mm	mm	mm	mm	mm	mm	mm	mm	cm ⁴	mm	mm	cm ³	cm ³	mm			
1016 x 305 x 407	486.7	1006.3	305.0	541	30.0	988.1	2.86	28.9	102.884	26721	1016 x 305 x 407	40.8	6.97	19722	1732	23200	2789	0.86	
1016 x 305 x 437	437.0	1008.1	305.0	26.9	49.0	30.0	988.1	3.12	32.3	810322	23447	1016 x 305 x 437	40.4	6.49	17743	1536	20709	2467	0.86
1016 x 305 x 380	380.7	1016.9	303.0	24.4	43.9	30.0	988.1	3.46	35.6	605203	20486	1016 x 305 x 380	40.2	6.40	15807	1323	18339	2167	0.86
1016 x 305 x 340	340.4	1006.1	302.0	21.1	40.0	30.0	988.1	3.70	41.1	472321	18460	1016 x 305 x 340	40.3	6.44	14346	1223	16593	1940	0.87
1016 x 305 x 314	314.3	999.9	300.0	19.1	35.9	30.0	988.1	4.18	45.5	344003	16232	1016 x 305 x 314	40.1	6.37	12883	1082	14850	1732	0.87
1016 x 305 x 272	272.3	990.1	300.0	16.5	31.0	30.0	988.1	4.86	52.6	253094	14004	1016 x 305 x 272	40.0	6.26	11180	934	12827	1469	0.87
1016 x 305 x 240	240.7	980.1	300.0	16.5	26.0	30.0	988.1	5.77	62.6	181150	11764	1016 x 305 x 240	39.9	6.09	9819	784	11330	1284	0.86
1016 x 305 x 222	222.0	970.3	300.0	16.0	21.1	30.0	988.1	7.11	54.3	107961	9548	1016 x 305 x 222	38.0	5.81	8409	636	9838	1019	0.85
914 x 419 x 380	380.0	921.0	420.5	21.4	36.8	24.1	798.6	5.74	37.4	719620	49438	914 x 419 x 380	38.2	6.89	19027	2161	17646	2040	0.86
914 x 419 x 343	343.3	911.0	416.5	19.4	32.0	24.1	798.6	6.54	41.2	620790	39166	914 x 419 x 343	37.0	6.46	17236	1971	15476	2069	0.86
914 x 305 x 289	289.1	926.6	307.7	19.5	32.0	19.1	824.4	4.81	42.3	504187	15597	914 x 305 x 289	37.0	6.81	10683	1014	12570	1401	0.86
914 x 305 x 253	253.4	918.4	305.5	17.3	27.8	19.1	824.4	6.47	47.7	430300	13301	914 x 305 x 253	36.8	6.42	8901	871	10942	1379	0.86
914 x 305 x 224	224.2	910.4	304.1	15.3	23.9	19.1	824.4	8.36	51.8	316144	11236	914 x 305 x 224	36.3	6.27	8289	739	9625	1163	0.86
914 x 305 x 201	200.9	903.0	303.3	15.1	20.2	19.1	824.4	7.31	54.6	232554	9423	914 x 305 x 201	35.7	6.07	7204	621	8362	982	0.85
838 x 292 x 226	226.5	850.9	293.0	16.1	26.0	17.0	761.7	5.40	47.3	339704	11360	838 x 292 x 226	34.3	6.27	7965	773	9155	1211	0.87
838 x 292 x 194	193.8	840.7	292.4	14.7	21.7	17.0	761.7	6.74	51.6	279176	9086	838 x 292 x 194	33.6	6.06	6841	620	7842	974	0.86
838 x 292 x 176	175.9	834.9	291.7	14.0	18.8	17.0	761.7	7.78	54.4	246021	7799	838 x 292 x 176	33.1	5.90	5953	535	6992	942	0.85
762 x 287 x 197	198.0	769.8	288.0	15.6	25.4	16.5	688.0	5.28	44.0	239957	8175	762 x 287 x 197	30.9	5.71	6234	610	7187	958	0.85
762 x 287 x 173	173.0	762.2	286.7	14.3	21.8	16.5	688.0	6.17	48.0	205263	6890	762 x 287 x 173	30.5	5.58	5367	514	6188	907	0.85

Contents

The benefits of steel construction	Page 4
Index of tables	
Advance® UK Beams	Page 8
Advance® UK Columns	Page 12
Advance® UK Parallel Flange Channels	Page 14
Advance® UK Angles	
Equal	Page 16
Unequal	Page 18
Sustainability	Page 14
Steel in action	Page 18

Introduction

Corus is the largest UK steel maker and one of the world's leading manufacturers of high quality steel products. Corus is Europe's second largest steel producer with annual revenues of more than £12 billion and a crude steel production of about 20 million tonnes. With main steelmaking operations primarily in the UK and the Netherlands, Corus provides innovative solutions to the construction, automotive, packaging, mechanical engineering and other markets worldwide. Corus is a subsidiary of Tata Steel, the world's sixth largest steel producer. With a combined presence in nearly 50 countries, Tata Steel including Corus has 84,000 employees across five continents and a crude steel production capacity of 27 million tonnes in 2007.

Construction is the largest single market for Corus products, accounting for over 30 per cent of group turnover. The Corus brand represents quality and strength, and Corus strives to deliver outstanding value in steel whilst working in a safe and sustainable environment.

Steel is the most sustainable of construction materials, not just because it can all be re-used or multicycled again and again without ever degrading its quality, but also because major advantages flow from the decision to select steel as a solution, advantages that add up to significant benefits to the users of steel and society as a whole.

This brochure has been developed as a teaching resource for engineering students. It provides a general introduction to *Advance* structural sections and includes a selection of property tables to assist students with the design of steel structures.

While the publication contains a selection of property tables from the Corus *Advance* sections range, it is not a comprehensive listing. For further information and a full listing of *Advance* section properties and member capacities, in tabular form, The Blue Book can be downloaded from www.corusconstruction.com

The benefits of steel construction

For many years, steel has provided a cost-effective form of construction for both industrial and commercial buildings.

The creation of new, exciting buildings brings architectural demands which are constantly stretching the performance of the structural elements and the ingenuity of engineers. Whether the requirement is for an open structure, a curved façade or a long span, steel meets the challenge with spectacular results.

Construction methods and details have been developed to ensure that steel is able to economically meet the strict acoustic and thermal regulations contained within the recently amended Building Regulations. However, many factors contribute to cost effectiveness and whilst the weight of steel can give a crude measurement of efficiency, it doesn't take into account the reduced costs of fire protection and cladding and the ease of service installation, which can provide substantial benefits.

The economics of construction suggest that the ratio of capital cost: operational costs: business generated is 1:5:200 so provision of a flexible solution for changing business needs – which have a much shorter life cycle than the building – makes sound economic sense.

The key benefits offered by steel construction are:

- **Speed on site.**
- **Economy.**
- **Flexibility.**
- **Adaptability.**
- **Predictability.**
- **Precision.**
- **Health and safety.**
- **Known performance in fire.**
- **Sustainability.**
- **Recyclability.**
- **Lightness of structure.**
- **Long span.**





Speed and cost of construction

All steel construction uses prefabricated components that can be rapidly installed to give the construction programme predictability and allow the client to benefit sooner from earlier business activity, sales or rental income. The reduced construction period can lead to a reduction in the cost of site preliminaries and the cost of management, resulting in a cost saving of up to two per cent of the finished building cost. Faster construction reduces the cost of finance, since a shorter construction period reduces the time during which interest has to be paid. The rapid completion of a building also brings an earlier return on investment as new tenants can move in sooner, offsetting the cost of borrowing.



Flexibility and adaptability

The ease with which a building can be extended can be an important factor in responding to the changing needs of a building owner or occupier. The most sustainable solutions ensure that buildings can be simply and easily adapted and that, if necessary, additional members can be attached to an existing frame with minimum disturbance and cost. Steel frames are easier to alter than the alternatives if the building use changes. Long-span steel construction reduces the number of vertical columns in a building and offers complete flexibility of internal layout. It means that a building can be configured to incorporate any combination of large open-plan areas, individual rooms and corridors. For all steel systems, internal

walls can be repositioned, allowing buildings to be adapted endlessly to suit the changing needs of their occupants.

For spans up to 12m, shallow floor solutions can be used to reduce floor depth and provide a flat soffit with complete flexibility of layout.

The integration of services within the structural elements of buildings gives designers the opportunity to reduce storey height. This provides the double benefit of reducing the amount of cladding required and reducing heat loss through the envelope.



Reduced disruption

Steel construction can dramatically reduce the impact of building activities on the surrounding area. This is particularly important in inner city locations or sites close to residential areas. Steel construction minimises noise and dust, shortens the construction period and reduces the amount of waste generated. Deliveries are fewer and can be timed to suit local traffic conditions. Steel offers lighter construction and consequently requires smaller foundations, which all contributes to the reduced construction period and disruption to the area around the site.

Aesthetics

The nature of steel construction expands the possibilities for architectural expression.

Opportunities arise through the use of features such as shallow floor construction, storey high glazing, columns within separating walls and long-span internal structures. The versatility of steel construction allows complex geometries to be used that satisfy the architectural concept and create landmark designs with exposed steelwork and large, open spaces.

Sustainability

Steel-framed buildings are flexible in layout and adaptable. Steel is demountable and the elements can be revised. Steel offers a clean, efficient and rapid construction method, which reduces the impact of building activities on the environment. All steel construction is produced efficiently and the prefabrication process minimises abortive activities and waste.

The small amount of waste produced during manufacture and fabrication is collected and recycled. Steel can be recycled time and again without detriment to its properties or performance. Other structural materials do not offer the same scope for recycling as, in the main, they can only be downgraded.

40 per cent of world steel production is from recycled material but overall global demand cannot be satisfied by recycled material alone.



Fire safety and fire engineering

The need for safe and efficient buildings has meant that steel systems have been subjected to detailed research over many years to ensure that the effects of fire on the material and components is fully understood. The result of this research is the ability to fire engineer a steel structure to ensure that it meets the legislative requirements at the minimum of cost, without compromising safety – in some circumstances without applied fire protection.

Fire protection is often on the critical path so off-site application has significant benefits in terms of increased speed of construction.



Built-in quality

Off-site fabrication improves the quality of the building frame, since the majority of work is carried out under closely controlled factory conditions – where it is not affected by on-site trades or the weather. The ability to design and draw the proposed structure in three-dimensions gives designers and steelwork contractors the opportunity to develop details and check for clashes, leading to high accuracy, no defects and a “right-first-time” build with minimised time and disruption on site.

Steel does not suffer from creep or shrinkage and, when properly protected, does not rot or decay.

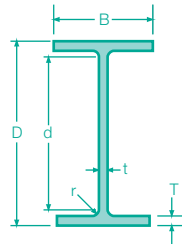
Support

The competitive nature of the construction market means that the steel industry is constantly striving for better solutions for the client. The steel industry has an excellent track record for innovation, whether it is in the form of new products backed up by sound research or improved methods of working. As well as looking to the future, the industry provides unrivalled support to users of steel through the network of Corus Regional Technical Managers and organisations such as The British Constructional Steelwork Association (BCSA) and the Steel Construction Institute (SCI).

Safety

Safety is of paramount importance in any construction project. Experienced personnel working for responsible contractors carrying out tasks for which they have been trained will reduce the potential for accidents. The Register of Qualified Steelwork Contractors (RQSC) has been instigated by the steel industry to highlight contractors who are able to demonstrate a responsible attitude. This isn't just a list of companies. Each company must be regularly audited by specialist steelwork auditors who check the company's financial resources, technical expertise and track record. The result is categorisation of the company in terms of the work it can execute technically and classification of the company in terms of the maximum size of contract it should handle.

Advance® UK Beams

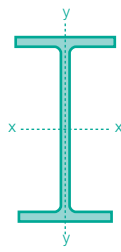


Designation	Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness of web t mm	Thickness of flange T mm	Root radius r mm	Depth between fillets d mm	Ratios for local buckling		Second moment of area		Radius of gyration		
								Flange B/2T	Web d/t	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	
1016x305	487	486.7	1036.3	308.5	30.0	54.1	30.0	868.1	2.85	28.9	1021884	26721	40.6	6.57
	437	437.0	1026.1	305.4	26.9	49.0	30.0	868.1	3.12	32.3	910322	23447	40.4	6.49
	393	392.7	1015.9	303.0	24.4	43.9	30.0	868.1	3.45	35.6	807503	20496	40.2	6.40
	349	349.4	1008.1	302.0	21.1	40.0	30.0	868.1	3.78	41.1	723131	18460	40.3	6.44
	314	314.3	999.9	300.0	19.1	35.9	30.0	868.1	4.18	45.5	644063	16232	40.1	6.37
	272	272.3	990.1	300.0	16.5	31.0	30.0	868.1	4.84	52.6	553974	14004	40.0	6.35
	249	248.7	980.1	300.0	16.5	26.0	30.0	868.1	5.77	52.6	481192	11754	39.0	6.09
222	222.0	970.3	300.0	16.0	21.1	30.0	868.1	7.11	54.3	407961	9546	38.0	5.81	
914x419	388	388.0	921.0	420.5	21.4	36.6	24.1	799.6	5.74	37.4	719635	45438	38.2	9.59
	343	343.3	911.8	418.5	19.4	32.0	24.1	799.6	6.54	41.2	625780	39156	37.8	9.46
914x305	289	289.1	926.6	307.7	19.5	32.0	19.1	824.4	4.81	42.3	504187	15597	37.0	6.51
	253	253.4	918.4	305.5	17.3	27.9	19.1	824.4	5.47	47.7	436305	13301	36.8	6.42
	224	224.2	910.4	304.1	15.9	23.9	19.1	824.4	6.36	51.8	376414	11236	36.3	6.27
	201	200.9	903.0	303.3	15.1	20.2	19.1	824.4	7.51	54.6	325254	9423	35.7	6.07
838x292	226	226.5	850.9	293.8	16.1	26.8	17.8	761.7	5.48	47.3	339704	11360	34.3	6.27
	194	193.8	840.7	292.4	14.7	21.7	17.8	761.7	6.74	51.8	279175	9066	33.6	6.06
	176	175.9	834.9	291.7	14.0	18.8	17.8	761.7	7.76	54.4	246021	7799	33.1	5.90
762x267	197	196.8	769.8	268.0	15.6	25.4	16.5	686.0	5.28	44.0	239957	8175	30.9	5.71
	173	173.0	762.2	266.7	14.3	21.6	16.5	686.0	6.17	48.0	205282	6850	30.5	5.58
	147	146.9	754.0	265.2	12.8	17.5	16.5	686.0	7.58	53.6	168502	5455	30.0	5.40
	134	133.9	750.0	264.4	12.0	15.5	16.5	686.0	8.53	57.2	150692	4788	29.7	5.30
686x254	170	170.2	692.9	255.8	14.5	23.7	15.2	615.1	5.40	42.4	170326	6630	28.0	5.53
	152	152.4	687.5	254.5	13.2	21.0	15.2	615.1	6.06	46.6	150355	5784	27.8	5.46
	140	140.1	683.5	253.7	12.4	19.0	15.2	615.1	6.68	49.6	136267	5183	27.6	5.39
	125	125.2	677.9	253.0	11.7	16.2	15.2	615.1	7.81	52.6	117992	4383	27.2	5.24
610x305	238	238.1	635.8	311.4	18.4	31.4	16.5	540.0	4.96	29.3	209471	15837	26.3	7.23
	179	179.0	620.2	307.1	14.1	23.6	16.5	540.0	6.51	38.3	153024	11408	25.9	7.07
	149	149.2	612.4	304.8	11.8	19.7	16.5	540.0	7.74	45.8	125876	9308	25.7	7.00
610x229	140	139.9	617.2	230.2	13.1	22.1	12.7	547.6	5.21	41.8	111777	4505	25.0	5.03
	125	125.1	612.2	229.0	11.9	19.6	12.7	547.6	5.84	46.0	98610	3932	24.9	4.97
	113	113.0	607.6	228.2	11.1	17.3	12.7	547.6	6.60	49.3	87318	3434	24.6	4.88
	101	101.2	602.6	227.6	10.5	14.8	12.7	547.6	7.69	52.2	75780	2915	24.2	4.75
610x178	100	100.3	607.4	179.2	11.3	17.2	12.7	547.6	5.21	48.5	72528	1658	23.8	3.60
	92	92.2	603.0	178.8	10.9	15.0	12.7	547.6	5.96	50.2	64577	1436	23.4	3.50
	82	81.8	598.6	177.9	10.0	12.8	12.7	547.6	6.95	54.8	55869	1207	23.2	3.40
533x312	272	273.3	577.1	320.2	21.1	37.6	12.7	476.5	4.26	22.6	198578	20615	23.9	7.70
	219	218.8	560.3	317.4	18.3	29.2	12.7	476.5	5.43	26.0	150976	15589	23.3	7.48
	182	181.5	550.7	314.5	15.2	24.4	12.7	476.5	6.44	31.3	123222	12667	23.1	7.40
	150	150.6	542.5	312.0	12.7	20.3	12.7	476.5	7.68	37.5	100633	10285	22.9	7.32
533x210	138	138.3	549.1	213.9	14.7	23.6	12.7	476.5	4.53	32.4	86088	3864	22.1	4.68
	122	122.0	544.5	211.9	12.7	21.3	12.7	476.5	4.97	37.5	76043	3388	22.1	4.67
	109	109.0	539.5	210.8	11.6	18.8	12.7	476.5	5.61	41.1	66822	2943	21.9	4.60
	101	101.0	536.7	210.0	10.8	17.4	12.7	476.5	6.03	44.1	61519	2692	21.9	4.57
	92	92.1	533.1	209.3	10.1	15.6	12.7	476.5	6.71	47.2	55227	2389	21.7	4.51
	82	82.2	528.3	208.8	9.6	13.2	12.7	476.5	7.91	49.6	47539	2007	21.3	4.38
533x165	85	84.8	534.9	166.5	10.3	16.5	12.7	476.5	5.05	46.3	48631	1275	21.2	3.44
	74	74.7	529.1	165.9	9.7	13.6	12.7	476.5	6.10	49.1	41058	1040	20.8	3.30
	66	65.7	524.7	165.1	8.9	11.4	12.7	476.5	7.24	53.5	35028	859	20.5	3.20

Dimensions and properties to BS4-1:2005.

► These dimensions are in addition to our standard range of BS4 sections.

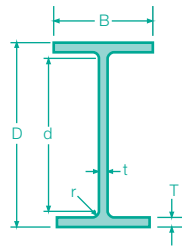
* Sections in italics may become slender under axial compression.



UKB

Elastic modulus		Plastic modulus		Buckling parameter u	Torsional index x	Warping constant H dm ⁶	Torsional constant J cm ⁴	Area of section cm ²	Indicative values for Advance275 M _{cx} P _{cy} * for L _c =3.5m		Designation	
Axis x-x cm ²	Axis y-y cm ²	Axis x-x cm ³	Axis y-y cm ³						kNm	kN	Serial size	
19722	1732	23208	2799	0.867	21.1	64.4	4299	620	5920	12400	487	1016x305
17743	1535	20769	2467	0.868	23.1	56.0	3185	557	5300	11600	437	
15897	1353	18538	2167	0.868	25.5	48.4	2330	500	4730	10300	393	
14346	1223	16593	1940	0.872	27.9	43.3	1718	445	4400	9900	349	
12883	1082	14850	1712	0.872	30.7	37.7	1264	400	3940	8860	314	
11190	934	12827	1469	0.873	35.0	32.2	835	347	3400	7090	272	
9819	784	11350	1244	0.861	39.8	26.8	582	317	3010	6330	249	
8409	636	9808	1019	0.850	45.7	21.5	390	283	2600	5450	222	
15627	2161	17666	3340	0.885	26.7	88.9	1734	494	4680	12100	388	914x419
13726	1871	15478	2889	0.883	30.1	75.8	1193	437	4100	10700	343	
10883	1014	12570	1601	0.867	31.9	31.2	926	368	3330	8220	289	914x305
9501	871	10942	1370	0.866	36.2	26.4	626	323	2900	6800	253	
8269	739	9535	1163	0.861	41.3	22.1	422	286	2530	5790	224	
7204	621	8352	982	0.854	46.8	18.4	291	256	2210	5000	201	
7985	773	9155	1211	0.870	35.0	19.3	514	289	2430	6060	226	838x292
6641	620	7640	974	0.862	41.6	15.2	306	247	2020	4950	194	
5893	535	6808	842	0.856	46.5	13.0	221	224	1800	4350	176	
6234	610	7167	958	0.869	33.2	11.3	404	251	1900	5310	197	762x267
5387	514	6198	807	0.864	38.1	9.39	267	220	1640	4510	173	
4470	411	5156	647	0.858	45.2	7.40	159	187	1370	3520	147	
4018	362	4644	570	0.854	49.8	6.46	119	171	1280	3200	134	
4916	518	5631	811	0.872	31.8	7.42	308	217	1490	4520	170	686x254
4374	455	5001	710	0.871	35.5	6.42	220	194	1330	4010	152	
3987	409	4558	638	0.868	38.7	5.72	169	178	1210	3450	140	
3481	346	3994	542	0.862	43.9	4.80	116	159	1060	2970	125	
6589	1017	7486	1574	0.886	21.3	14.5	785	303	1980	7000	238	610x305
4935	743	5548	1144	0.886	27.7	10.2	340	228	1470	5230	179	
4111	611	4594	937	0.886	32.7	8.17	200	190	1220	4210	149	
3622	391	4142	611	0.875	30.6	3.99	216	178	1100	3510	140	610x229
3221	343	3676	535	0.873	34.1	3.45	154	159	974	3110	125	
2874	301	3281	469	0.870	38.0	2.99	111	144	869	2780	113	
2515	256	2881	400	0.864	43.1	2.52	77.0	129	792	2340	101	
2388	185	2786	296	0.855	38.7	1.44	95.0	128	738	1840	100	610x178
2142	161	2511	258	0.848	42.8	1.24	71.0	117	691	1650	92	
1867	136	2194	218	0.843	48.5	1.04	48.8	104	603	1410	82	
6882	1288	7859	1985	0.890	15.9	15.0	1288	348	2083	8170	272	533x312
5389	982	6109	1514	0.884	19.8	11.0	642	279	1619	6500	219	
4475	806	5030	1237	0.885	23.4	8.77	373	231	1333	5370	182	
3710	659	4142	1009	0.885	27.8	7.01	216	192	1098	4450	150	
3136	361	3613	568	0.873	25.0	2.67	250	176	957	3290	138	533x210
2793	320	3196	500	0.877	27.6	2.32	178	155	847	2900	122	
2477	279	2829	436	0.875	30.9	1.99	126	139	750	2570	109	
2292	256	2612	399	0.874	33.2	1.81	101	129	692	2370	101	
2072	228	2360	355	0.872	36.5	1.60	75.7	117	649	2180	92	
1800	192	2059	300	0.864	41.6	1.33	51.5	105	566	1910	82	
1818	153	2107	243	0.862	35.5	0.857	73.8	108	558	1460	85	533x165
1552	125	1808	200	0.853	41.1	0.691	47.9	95.2	497	1240	74	
1335	104	1561	166	0.847	47.0	0.566	32.0	83.7	429	1040	66	

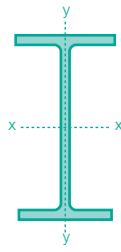
Advance® UK Beams



Designation	Serial size	Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness of web t mm	Thickness of flange T mm	Root radius r mm	Depth between fillets d mm	Ratios for local buckling		Second moment of area		Radius of gyration	
									Flange B/2T	Web d/t	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm
➤ 457x191	161	161.4	492.0	199.4	18.0	32.0	10.2	407.6	3.12	22.6	79779	4250	19.7	4.55
	133	133.3	480.6	196.7	15.3	26.3	10.2	407.6	3.74	26.6	63841	3350	19.4	4.44
	106	105.8	469.2	194.0	12.6	20.6	10.2	407.6	4.71	32.3	48873	2515	19.0	4.32
	98	98.3	467.2	192.8	11.4	19.6	10.2	407.6	4.92	35.8	45727	2347	19.1	4.33
	89	89.3	463.4	191.9	10.5	17.7	10.2	407.6	5.42	38.8	41015	2089	19.0	4.29
	82	82.0	460.0	191.3	9.9	16.0	10.2	407.6	5.98	41.2	37051	1871	18.8	4.23
	74	74.3	457.0	190.4	9.0	14.5	10.2	407.6	6.57	45.3	33319	1671	18.8	4.20
67	67.1	453.4	189.9	8.5	12.7	10.2	407.6	7.48	48.0	29380	1452	18.5	4.12	
➤ 457x152	82	82.1	465.8	155.3	10.5	18.9	10.2	407.6	4.11	38.8	36589	1185	18.7	3.37
	74	74.2	462.0	154.4	9.6	17.0	10.2	407.6	4.54	42.5	32674	1047	18.6	3.33
	67	67.2	458.0	153.8	9.0	15.0	10.2	407.6	5.13	45.3	28927	913	18.4	3.27
	60	59.8	454.6	152.9	8.1	13.3	10.2	407.6	5.75	50.3	25500	795	18.3	3.23
	52	52.3	449.8	152.4	7.6	10.9	10.2	407.6	6.99	53.6	21369	645	17.9	3.11
➤ 406x178	85	85.3	417.2	181.9	10.9	18.2	10.2	360.4	5.00	33.1	31703	1830	17.1	4.11
	74	74.2	412.8	179.5	9.5	16.0	10.2	360.4	5.61	37.9	27310	1545	17.0	4.04
	67	67.1	409.4	178.8	8.8	14.3	10.2	360.4	6.25	41.0	24331	1365	16.9	3.99
	60	60.1	406.4	177.9	7.9	12.8	10.2	360.4	6.95	45.6	21596	1203	16.8	3.97
	54	54.1	402.6	177.7	7.7	10.9	10.2	360.4	8.15	46.8	18722	1021	16.5	3.85
➤ 406x140	53	53.3	406.6	143.3	7.9	12.9	10.2	360.4	5.55	45.6	18283	635	16.4	3.06
	46	46.0	403.2	142.2	6.8	11.2	10.2	360.4	6.35	53.0	15685	538	16.4	3.03
	39	39.0	398.0	141.8	6.4	8.6	10.2	360.4	8.24	56.3	12508	410	15.9	2.87
➤ 356x171	67	67.1	363.4	173.2	9.1	15.7	10.2	311.6	5.52	34.2	19463	1362	15.1	3.99
	57	57.0	358.0	172.2	8.1	13.0	10.2	311.6	6.62	38.5	16038	1108	14.9	3.91
	51	51.0	355.0	171.5	7.4	11.5	10.2	311.6	7.46	42.1	14136	968	14.8	3.86
	45	45.0	351.4	171.1	7.0	9.7	10.2	311.6	8.82	44.5	12066	811	14.5	3.76
➤ 356x127	39	39.1	353.4	126.0	6.6	10.7	10.2	311.6	5.89	47.2	10172	358	14.3	2.68
	33	33.1	349.0	125.4	6.0	8.5	10.2	311.6	7.38	51.9	8249	280	14.0	2.58
➤ 305x165	54	54.0	310.4	166.9	7.9	13.7	8.9	265.2	6.09	33.6	11696	1063	13.0	3.93
	46	46.1	306.6	165.7	6.7	11.8	8.9	265.2	7.02	39.6	9899	896	13.0	3.90
	40	40.3	303.4	165.0	6.0	10.2	8.9	265.2	8.09	44.2	8503	764	12.9	3.86
➤ 305x127	48	48.1	311.0	125.3	9.0	14.0	8.9	265.2	4.48	29.5	9575	461	12.5	2.74
	42	41.9	307.2	124.3	8.0	12.1	8.9	265.2	5.14	33.2	8196	389	12.4	2.70
	37	37.0	304.4	123.4	7.1	10.7	8.9	265.2	5.77	37.4	7171	336	12.3	2.67
➤ 305x102	33	32.8	312.7	102.4	6.6	10.8	7.6	275.9	4.74	41.8	6501	194	12.5	2.15
	28	28.2	308.7	101.8	6.0	8.8	7.6	275.9	5.78	46.0	5366	155	12.2	2.08
	25	24.8	305.1	101.6	5.8	7.0	7.6	275.9	7.26	47.6	4455	123	11.9	1.97
➤ 254x146	43	43.0	259.6	147.3	7.2	12.7	7.6	219.0	5.80	30.4	6544	677	10.9	3.52
	37	37.0	256.0	146.4	6.3	10.9	7.6	219.0	6.72	34.8	5537	571	10.8	3.48
	31	31.1	251.4	146.1	6.0	8.6	7.6	219.0	8.49	36.5	4413	448	10.5	3.36
➤ 254x102	28	28.3	260.4	102.2	6.3	10.0	7.6	225.2	5.11	35.7	4005	179	10.5	2.22
	25	25.2	257.2	101.9	6.0	8.4	7.6	225.2	6.07	37.5	3415	149	10.3	2.15
	22	22.0	254.0	101.6	5.7	6.8	7.6	225.2	7.47	39.5	2841	119	10.1	2.06
➤ 203x133	30	30.0	206.8	133.9	6.4	9.6	7.6	172.4	6.97	26.9	2896	385	8.71	3.17
	25	25.1	203.2	133.2	5.7	7.8	7.6	172.4	8.54	30.2	2340	308	8.56	3.10
➤ 203x102	23	23.1	203.2	101.8	5.4	9.3	7.6	169.4	5.47	31.4	2105	164	8.46	2.36
➤ 178x102	19	19.0	177.8	101.2	4.8	7.9	7.6	146.8	6.41	30.6	1356	137	7.48	2.37
➤ 152x89	16	16.0	152.4	88.7	4.5	7.7	7.6	121.8	5.76	27.1	834	90	6.41	2.10
➤ 127x76	13	13.0	127.0	76.0	4.0	7.6	7.6	96.6	5.00	24.2	473	56	5.35	1.84

Dimensions and properties to BS4-1:2005.

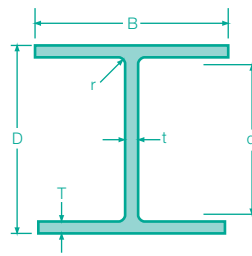
➤ These dimensions are in addition to our standard range of BS4 sections.



UKB

Elastic modulus		Plastic modulus		Buckling parameter u	Torsional index x	Warping constant H dm ⁶	Torsional constant J cm ⁴	Area of section cm ²	Indicative values for Advance275 P _{cy} for L ₀ =3.5m		Designation	
Axis x-x cm ²	Axis y-y cm ²	Axis x-x cm ³	Axis y-y cm ³						M _{cx} kNm	P _{cy} kN	Serial size	
3243	426	3778	672	0.882	16.4	2.25	515	206	1000	3770	161	457x191
2657	341	3070	535	0.880	19.6	1.73	292	170	814	3050	133	
2083	259	2389	405	0.877	24.4	1.27	146	135	633	2360	106	
1957	243	2232	379	0.881	25.7	1.18	121	125	592	2190	98	
1770	218	2014	338	0.880	28.3	1.04	90.7	114	534	1980	89	
1611	196	1831	304	0.877	30.9	0.922	69.2	104	504	1830	82	
1458	176	1653	272	0.877	33.9	0.818	51.8	94.6	455	1650	74	
1296	153	1471	237	0.872	37.9	0.705	37.1	85.5	405	1460	67	
1571	153	1812	240	0.873	27.4	0.591	89.2	105	480	1380	82	457x152
1414	136	1627	213	0.873	30.1	0.518	65.9	94.5	431	1220	74	
1263	119	1453	187	0.869	33.6	0.448	47.7	85.6	400	1100	67	
1122	104	1287	163	0.868	37.5	0.387	33.8	76.2	354	959	60	
950	85	1096	133	0.859	43.9	0.311	21.4	66.6	301	793	52	
1520	201	1733	313	0.881	24.4	0.728	93.0	109	459	1820	85	406x178
1323	172	1501	267	0.882	27.6	0.608	62.8	94.5	413	1580	74	
1189	153	1346	237	0.880	30.5	0.533	46.1	85.5	370	1410	67	
1063	135	1200	209	0.880	33.8	0.466	33.3	76.5	330	1260	60	
930	115	1055	178	0.871	38.3	0.392	23.1	69.0	290	1090	54	
899	89	1031	139	0.870	34.1	0.246	29.0	67.9	284	789	53	406x140
778	76	888	118	0.871	38.9	0.207	19.0	58.6	244	671	46	
629	58	724	91	0.858	47.5	0.155	10.7	49.7	199	523	39	
1071	157	1211	243	0.886	24.4	0.412	55.7	85.5	333	1410	67	356x171
896	129	1010	199	0.882	28.8	0.330	33.4	72.6	278	1170	57	
796	113	896	174	0.881	32.1	0.286	23.8	64.9	246	1030	51	
687	95	775	147	0.874	36.8	0.237	15.8	57.3	213	884	45	
576	57	659	89	0.871	35.2	0.105	15.1	49.8	181	469	39	356x127
473	45	543	70	0.863	42.2	0.0812	8.79	42.1	149	372	33	
754	127	846	196	0.889	23.6	0.234	34.8	68.8	233	1120	54	305x165
646	108	720	166	0.891	27.1	0.195	22.2	58.7	198	945	46	
560	93	623	142	0.889	31.0	0.164	14.7	51.3	171	816	40	
616	74	711	116	0.873	23.3	0.102	31.8	61.2	195	597	48	305x127
534	63	614	98	0.872	26.5	0.0846	21.1	53.4	169	509	42	
471	54	539	85	0.872	29.7	0.0725	14.8	47.2	148	442	37	
416	38	481	60	0.866	31.6	0.0442	12.2	41.8	132	269	33	305x102
348	31	403	48	0.859	37.4	0.0349	7.40	35.9	111	218	28	
292	24	342	39	0.846	43.4	0.0273	4.77	31.6	94.1	174	25	
504	92	566	141	0.891	21.2	0.103	23.9	54.8	156	777	43	254x146
433	78	483	119	0.890	24.3	0.0857	15.3	47.2	133	659	37	
351	61	393	94	0.880	29.6	0.0660	8.55	39.7	108	529	31	
308	35	353	55	0.874	27.5	0.0280	9.57	36.1	97.0	246	28	254x102
266	29	306	46	0.866	31.5	0.0230	6.42	32.0	84.0	206	25	
224	23	259	37	0.856	36.4	0.0182	4.15	28.0	71.2	167	22	
280	57	314	88	0.881	21.5	0.0374	10.3	38.2	86.5	468	30	203x133
230	46	258	71	0.877	25.6	0.0294	5.96	32.0	70.9	379	25	
207	32	234	50	0.888	22.5	0.0154	7.02	29.4	64.4	223	23	203x102
153	27	171	42	0.888	22.6	0.0099	4.41	24.3	47.1	186	19	178x102
109	20	123	31	0.890	19.6	0.0047	3.56	20.3	33.9	125	16	152x89
75	15	84	23	0.895	16.3	0.0020	2.85	16.5	23.1	80.3	13	127x76

Advance® UK Columns

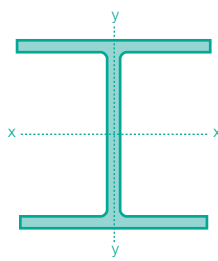


Designation		Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness of web t mm	Thickness of flange T mm	Root radius r mm	Depth between fillets d mm	Ratios for local buckling		Second moment of area		Radius of gyration	
Serial size									Flange B/2T	Web d/t	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm
356x406	634	633.9	474.6	424.0	47.6	77.0	15.2	290.2	2.75	6.10	274845	98125	18.4	11.0
	551	551.0	455.6	418.5	42.1	67.5	15.2	290.2	3.10	6.89	226938	82671	18.0	10.9
	467	467.0	436.6	412.2	35.8	58.0	15.2	290.2	3.55	8.11	183003	67834	17.5	10.7
	393	393.0	419.0	407.0	30.6	49.2	15.2	290.2	4.14	9.48	146618	55367	17.1	10.5
	340	339.9	406.4	403.0	26.6	42.9	15.2	290.2	4.70	10.9	122543	46853	16.8	10.4
	287	287.1	393.6	399.0	22.6	36.5	15.2	290.2	5.47	12.8	99875	38677	16.5	10.3
	235	235.1	381.0	394.8	18.4	30.2	15.2	290.2	6.54	15.8	79085	30993	16.3	10.2
356x368	202	201.9	374.6	374.7	16.5	27.0	15.2	290.2	6.94	17.6	66261	23688	16.1	9.60
	177	177.0	368.2	372.6	14.4	23.8	15.2	290.2	7.83	20.2	57118	20529	15.9	9.54
	153	152.9	362.0	370.5	12.3	20.7	15.2	290.2	8.95	23.6	48589	17553	15.8	9.49
	129	129.0	355.6	368.6	10.4	17.5	15.2	290.2	10.5	27.9	40246	14611	15.6	9.43
305x305	283	282.9	365.3	322.2	26.8	44.1	15.2	246.7	3.65	9.21	78872	24635	14.8	8.27
	240	240.0	352.5	318.4	23.0	37.7	15.2	246.7	4.22	10.7	64203	20315	14.5	8.15
	198	198.1	339.9	314.5	19.1	31.4	15.2	246.7	5.01	12.9	50904	16299	14.2	8.04
	158	158.1	327.1	311.2	15.8	25.0	15.2	246.7	6.22	15.6	38747	12569	13.9	7.90
	137	136.9	320.5	309.2	13.8	21.7	15.2	246.7	7.12	17.9	32814	10700	13.7	7.83
	118	117.9	314.5	307.4	12.0	18.7	15.2	246.7	8.22	20.6	27672	9059	13.6	7.77
	97	96.9	307.9	305.3	9.9	15.4	15.2	246.7	9.91	24.9	22249	7308	13.4	7.69
254x254	167	167.1	289.1	265.2	19.2	31.7	12.7	200.3	4.18	10.4	29998	9870	11.9	6.81
	132	132.0	276.3	261.3	15.3	25.3	12.7	200.3	5.16	13.1	22529	7531	11.6	6.69
	107	107.1	266.7	258.8	12.8	20.5	12.7	200.3	6.31	15.6	17510	5928	11.3	6.59
	89	88.9	260.3	256.3	10.3	17.3	12.7	200.3	7.41	19.4	14268	4857	11.2	6.55
	73	73.1	254.1	254.6	8.6	14.2	12.7	200.3	8.96	23.3	11407	3908	11.1	6.48
▶ 203x203	127	127.5	241.4	213.9	18.1	30.1	10.2	160.8	3.55	8.88	15437	4920	9.75	5.50
	113	113.5	235.0	212.1	16.3	26.9	10.2	160.8	3.94	9.87	13301	4285	9.59	5.45
	100	99.6	228.6	210.3	14.5	23.7	10.2	160.8	4.44	11.1	11298	3679	9.44	5.39
	86	86.1	222.2	209.1	12.7	20.5	10.2	160.8	5.10	12.7	9449	3127	9.28	5.34
	71	71.0	215.8	206.4	10.0	17.3	10.2	160.8	5.97	16.1	7618	2537	9.18	5.30
	60	60.0	209.6	205.8	9.4	14.2	10.2	160.8	7.25	17.1	6125	2065	8.96	5.20
	52	52.0	206.2	204.3	7.9	12.5	10.2	160.8	8.17	20.4	5259	1778	8.91	5.18
▶ 46	46.1	203.2	203.6	7.2	11.0	10.2	160.8	9.25	22.3	4568	1548	8.82	5.13	
▶ 152x152	51	51.2	170.2	157.4	11.0	15.7	7.6	123.6	5.01	11.2	3227	1022	7.04	3.96
	44	44.0	166.0	155.9	9.5	13.6	7.6	123.6	5.73	13.0	2703	860	6.94	3.92
	37	37.0	161.8	154.4	8.0	11.5	7.6	123.6	6.71	15.5	2210	706	6.85	3.87
	30	30.0	157.6	152.9	6.5	9.4	7.6	123.6	8.13	19.0	1748	560	6.76	3.83
	23	23.0	152.4	152.2	5.8	6.8	7.6	123.6	11.2	21.3	1250	400	6.54	3.70

Dimensions and properties to BS4-1:2005.

▶ These dimensions are in addition to our standard range of BS4 sections.

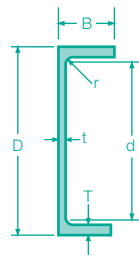
* Capacities in italics are governed by $1.2 \times Z_x \times p_y$.



UKC

Elastic modulus		Plastic modulus		Buckling parameter u	Torsional index x	Warping constant H dm ⁶	Torsional constant J cm ⁴	Area of section cm ²	Indicative values for Advance275 P _{cy} for L ₀ =3.5m		Designation	
Axis x-x cm ²	Axis y-y cm ²	Axis x-x cm ³	Axis y-y cm ³						kNm	kN	Serial size	
11582	4629	14235	7108	0.843	5.46	38.8	13720	808	3410	17600	634	356x406
9962	3951	12076	6058	0.841	6.05	31.1	9240	702	2930	15300	551	
8383	3291	10003	5034	0.839	6.86	24.3	5809	595	2550	13400	467	
6998	2721	8223	4154	0.837	7.86	18.9	3545	501	2100	11400	393	
6031	2325	6999	3544	0.836	8.85	15.5	2343	433	1780	9840	340	
5075	1939	5813	2949	0.835	10.2	12.3	1441	366	1540	8780	287	
4151	1570	4687	2383	0.834	12.1	9.54	812	299	1240	7150	235	
3538	1264	3972	1919	0.844	13.4	7.16	558	257	1050	6060	202	356x368
3103	1102	3455	1671	0.844	15.0	6.09	381	226	916	5320	177	
2684	948	2965	1435	0.844	17.0	5.11	251	195	786	4590	153	
2264	793	2479	1199	0.844	19.9	4.18	153	164	651	3850	129	
4318	1529	5105	2342	0.855	7.65	6.35	2034	360	1300	7640	283	305x305
3643	1276	4247	1950	0.854	8.74	5.03	1271	306	1130	6890	240	
2995	1037	3440	1581	0.854	10.2	3.88	734	252	912	5650	198	
2369	808	2681	1230	0.851	12.5	2.87	378	201	710	4480	158	
2048	692	2297	1052	0.851	14.2	2.39	249	174	609	3870	137	
1760	589	1958	895	0.850	16.2	1.98	161	150	519	3330	118	
1445	479	1592	726	0.850	19.3	1.56	91.2	123	438	2810	97	
2075	744	2424	1137	0.851	8.49	1.63	626	213	642	4490	167	254x254
1631	576	1869	878	0.850	10.3	1.19	319	168	495	3510	132	
1313	458	1485	697	0.848	12.4	0.898	172	136	393	2820	107	
1096	379	1224	575	0.850	14.5	0.717	102	113	324	2340	89	
898	307	992	465	0.849	17.3	0.562	57.6	93.1	273	1980	73	
1279	460	1517	704	0.854	7.38	0.549	427	162	402	3050	127	203x203
1132	404	1329	618	0.853	8.11	0.464	305	145	352	2710	113	
988	350	1148	534	0.852	9.02	0.386	210	127	304	2360	100	
850	299	977	456	0.850	10.2	0.318	137	110	259	2030	86	
706	246	799	374	0.853	11.9	0.250	80.2	90.4	212	1660	71	
584	201	656	305	0.846	14.1	0.197	47.2	76.4	180	1430	60	
510	174	567	264	0.848	15.8	0.167	31.8	66.3	156	1230	52	
450	152	497	231	0.847	17.7	0.143	22.2	58.7	137	1080	46	
379	130	438	199	0.848	10.1	0.0610	48.8	65.2	120	947	51	152x152
326	110	372	169	0.848	11.5	0.0499	31.7	56.1	102	806	44	
273	91	309	140	0.848	13.3	0.0399	19.2	47.1	84.9	667	37	
222	73	248	112	0.849	16.0	0.0308	10.5	38.3	68.1	536	30	
164	53	182	80	0.840	20.7	0.0212	4.63	29.2	48.4	392	23	

Advance® UK Parallel Flange Channels



Designation		Mass per metre kg/m	Depth of section D mm	Width of section B mm	Thickness of web t mm	Thickness of flange T mm	Distance of Cy cm	Root radius r mm	Depth between fillets d mm	Ratios for local buckling		Second moment of area	
Serial size	Flange B/T									Web d/t	Axis x-x cm ⁴	Axis y-y cm ⁴	
430x100	64	64.4	430	100	11.0	19.0	2.62	15	362	5.26	32.9	21939	722
380x100	54	54.0	380	100	9.5	17.5	2.79	15	315	5.71	33.2	15034	643
300x100	46	45.5	300	100	9.0	16.5	3.05	15	237	6.06	26.3	8229	568
300x90	41	41.4	300	90	9.0	15.5	2.60	12	245	5.81	27.2	7218	404
260x90	35	34.8	260	90	8.0	14.0	2.74	12	208	6.43	26.0	4728	353
260x75	28	27.6	260	75	7.0	12.0	2.10	12	212	6.25	30.3	3619	185
230x90	32	32.2	230	90	7.5	14.0	2.92	12	178	6.43	23.7	3518	334
230x75	26	25.7	230	75	6.5	12.5	2.30	12	181	6.00	27.8	2748	181
200x90	30	29.7	200	90	7.0	14.0	3.12	12	148	6.43	21.1	2523	314
200x75	23	23.4	200	75	6.0	12.5	2.48	12	151	6.00	25.2	1963	170
180x90	26	26.1	180	90	6.5	12.5	3.17	12	131	7.20	20.2	1817	277
180x75	20	20.3	180	75	6.0	10.5	2.41	12	135	7.14	22.5	1370	146
150x90	24	23.9	150	90	6.5	12.0	3.30	12	102	7.50	15.7	1162	253
150x75	18	17.9	150	75	5.5	10.0	2.58	12	106	7.50	19.3	861	131
125x65	15	14.8	125	65	5.5	9.5	2.25	12	82	6.84	14.9	483	80.0
100x50	10	10.2	100	50	5.0	8.5	1.73	9	65	5.88	13.0	208	32.3

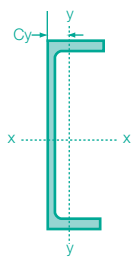
Dimensions and properties to BS4-1:2005.

Sustainability

The UK Government has recognised the importance of sustainable development and made it a central theme of its social and economic programmes.

Within this framework, construction has been singled out as a consequence of its contribution to the national economy and the significant impacts that the built environment has on everybody's quality of life. There is a strong consensus developing across the construction industry of the need to translate the

drive for sustainability into meaningful actions in everyday business, provided that this can be done in practical and affordable ways. The steel construction sector recognises this and has published a strategy, updated annually, which can be downloaded from www.corusconstruction.com



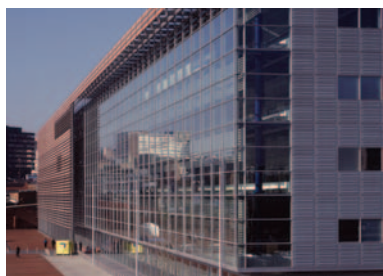
UKPFC

Radius of gyration		Elastic modulus		Plastic modulus		Buckling parameter	Torsional index	Warping constant	Torsional constant	Area of section	Indicative values for Advance275		Designation	
Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J	cm ²	M _{cx}	P _{cy} for L _e =3.5m	Serial size	
cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁴	cm ⁴		kNm	kN		
16.3	2.97	1020	97.9	1222	176	0.917	22.5	0.219	63.0	82.1	324	807	64	430x100
14.8	3.06	791	89.2	933	161	0.932	21.2	0.150	45.7	68.7	247	705	54	380x100
11.9	3.13	549	81.7	641	148	0.944	17.0	0.0813	36.8	58.0	170	614	46	300x100
11.7	2.77	481	63.1	568	114	0.934	18.4	0.0581	28.8	52.7	156	473	41	300x90
10.3	2.82	364	56.3	425	102	0.942	17.2	0.0379	20.6	44.4	117	410	35	260x90
10.1	2.30	278	34.4	328	62.0	0.932	20.5	0.0203	11.7	35.1	90.2	234	28	260x75
9.27	2.86	306	55.0	355	99.2	0.950	15.1	0.0279	19.3	41.0	97.6	387	32	230x90
9.17	2.35	239	34.8	278	63.2	0.947	17.3	0.0153	11.8	32.7	76.6	226	26	230x75
8.16	2.88	252	53.4	291	94.6	0.954	12.9	0.0197	18.3	37.9	80.1	361	30	200x90
8.11	2.39	196	33.8	227	60.8	0.956	14.8	0.0107	11.1	29.9	62.4	212	23	200x75
7.40	2.89	202	47.4	232	83.5	0.949	12.8	0.0141	13.3	33.2	63.8	318	26	180x90
7.27	2.38	152	28.8	176	52.0	0.946	15.3	0.0075	7.34	25.9	48.5	183	20	180x75
6.18	2.89	155	44.4	179	77.0	0.936	10.8	0.0089	11.8	30.4	49.1	291	24	150x90
6.15	2.40	115	26.6	132	47.3	0.946	13.1	0.0047	6.10	22.8	36.3	163	18	150x75
5.07	2.06	77.3	18.8	89.9	33.5	0.942	11.1	0.0019	4.72	18.8	24.7	104	15	125x65
4.00	1.58	41.5	9.9	48.9	17.6	0.942	10.0	0.0005	2.53	13.0	13.4	44.9	10	100x50



High strength-to-weight ratio

Steel's inherent strength and high strength-to-weight ratio are exploited in resource efficient structures and buildings. Long-span steel solutions create open, column-free space that is responsive to changes in building use. Service integration within the structural depth of steel frames not only reduces cladding costs but can also enable additional floors to be constructed in multi-storey buildings.



Inherently flexible and adaptable

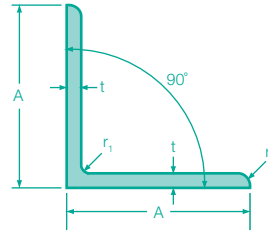
Steel buildings are inherently flexible and adaptable, and can be easily extended. Steel's 'lightness' enables new steel structures to be built on existing buildings without overloading their foundations. Long-span solutions create flexible internal space. Openings within the webs of beams enable flexibility in routing building services.



Re-use of existing structures

The flexibility of steel construction systems make them ideal for renovating and refurbishing buildings. Existing façades can be retained and new steel structures used to 'open up' the interior of buildings. Modern steel roofing and cladding systems can be used to bring old buildings up to today's high standards of performance by re-cladding or over-cladding the existing building.

Advance® UK Angles Equal Angles



Designation			Root radius r_1 mm	Toe radius r_2 mm	Area of section cm ²	Distance to centre of gravity C cm	Second moment of area		
Serial size A x A mm x mm	Thickness t mm	Mass per metre kg/m					Axis x-x, y-y cm ⁴	Axis u-u cm ⁴	Axis v-v cm ⁴
200x200	24	71.1	18	9.0	90.6	5.84	3331	5280	1380
	20	59.9	18	9.0	76.3	5.68	2851	4530	1170
	18	54.2	18	9.0	69.1	5.60	2600	4150	1050
	16	48.5	18	9.0	61.8	5.52	2342	3720	960
150x150	18	40.1	16	8.0	51.0	4.37	1050	1680	440
	15	33.8	16	8.0	43.0	4.25	898	1430	370
	12	27.3	16	8.0	34.8	4.12	737	1170	303
	10	23.0	16	8.0	29.3	4.03	624	990	258
120x120	15	26.6	13	6.5	33.9	3.51	445	710	186
	12	21.6	13	6.5	27.5	3.40	368	584	152
	10	18.2	13	6.5	23.2	3.31	313	497	129
	8	14.7	13	6.5	18.7	3.23	256	411	107
100x100	15	21.9	12	6.0	27.9	3.02	249	395	105
	12	17.8	12	6.0	22.7	2.90	207	328	85.7
	10	15.0	12	6.0	19.2	2.82	177	280	73.0
	8	12.2	12	6.0	15.5	2.74	145	230	59.9
90x90	12	15.9	11	5.5	20.3	2.66	148	235	62.0
	10	13.4	11	5.5	17.1	2.58	127	201	52.6
	8	10.9	11	5.5	13.9	2.50	104	166	43.1
	7	9.6	11	5.5	12.2	2.45	92.6	147	38.3

Dimensions and properties to BS EN 10056-1:1999.

➤ These dimensions are in addition to our standard range to the BS EN 10056-1:1999 specification.



Demountability

Steel construction systems are highly and inherently demountable. By 'building-in' demountability at the design stage, steel structures can be easily disassembled and re-used in new applications.



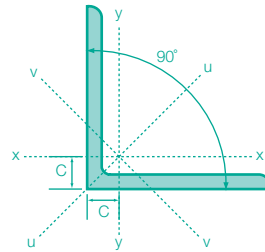
Low waste

Steel construction generates very little waste. The by-products of steel production are widely used by the construction industry. Any waste generated during manufacture is recycled. There is virtually no waste from steel products on the construction site.



Recyclability

Steel is 100 per cent recyclable and can be recycled, again and again, without degradation of its properties or performance. The current recycling and re-use rate for structural steel sections in the UK is 99 per cent.



Radius of gyration			Elastic modulus Axis x-x, y-y cm ³	Torsional constant J cm ⁴	Equivalent slenderness coefficient ϕ_a	Indicative P _{cy} values for Advance275 for L _e =3.5m kN	Designation	
Axis x-x, y-y cm	Axis u-u cm	Axis v-v cm					Thickness t mm	Serial size A x A mm x mm
6.06	7.64	3.90	235	182	2.50	1460	24	200x200
6.11	7.70	3.92	199	107	3.05	1240	20	
6.13	7.75	3.90	181	78.9	3.43	1120	18	
6.16	7.76	3.94	162	56.1	3.85	974	16	
4.54	5.73	2.92	98.8	58.6	2.48	617	18	150x150
4.57	5.76	2.93	83.5	34.6	3.01	528	15	
4.60	5.80	2.95	67.8	18.2	3.77	413	12	
4.62	5.82	2.97	56.9	10.8	4.51	282	10	
3.62	4.57	2.34	52.4	27.0	2.37	302	15	120x120
3.65	4.60	2.35	42.7	14.2	2.99	246	12	
3.67	4.63	2.36	36.0	8.41	3.61	209	10	
3.69	4.67	2.38	29.1	4.44	4.56	141	8	
2.98	3.76	1.94	35.6	22.3	1.92	184	15	100x100
3.02	3.80	1.94	29.1	11.8	2.44	149	12	
3.04	3.83	1.95	24.6	6.97	2.94	127	10	
3.06	3.85	1.96	20.0	3.68	3.70	101	8	
2.70	3.40	1.75	23.4	10.46	2.17	112	12	90x90
2.72	3.42	1.75	19.8	6.20	2.64	94.4	10	
2.74	3.45	1.76	16.1	3.28	3.33	77.5	8	
2.75	3.46	1.77	14.1	2.24	3.80	66.3	7	



Rapid site erection

On site, steel construction is fast and of high quality. Steel construction reduces the risk of weather-related delays and there is less 'snagging' time and cost. These factors lead to greater predictability in the construction programme.



Minimal impact

Steel construction minimises the impact on communities neighbouring the construction site. Construction is dry, dust-free, relatively quiet and minimises the number of deliveries to site.

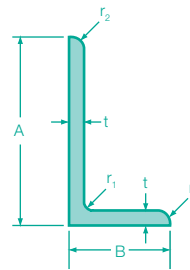


Off-site manufacture

The steel construction supply chain is highly efficient. All construction products are manufactured off site under factory-controlled conditions that ensure their high quality. Factory working is safer, faster and more efficient than site working. Most processes are fully or semi-automated with advanced computer design and manufacturing software used to further improve material and production efficiencies. Just-in-time deliveries to the construction site improve site logistics.

Advance® UK Angles

Unequal Angles



Designation			Root radius r_1 mm	Toe radius r_2 mm	Area of section cm ²	Distance to centre of gravity		Second moment of area			
Serial size A x B mm x mm	Thickness t mm	Mass per metre kg/m				Cx cm	Cy cm	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis u-u cm ⁴	Axis v-v cm ⁴
▶ 200x150	18	47.1	15	7.5	60.0	6.33	3.85	2376	1146	2920	623
	15	39.6	15	7.5	50.5	6.21	3.73	2023	979	2480	526
	12	32.0	15	7.5	40.8	6.08	3.61	1653	803	2030	430
200x100	15	33.7	15	7.5	43.0	7.16	2.22	1759	299	1860	193
	12	27.3	15	7.5	34.8	7.03	2.10	1441	247	1530	159
	10	23.0	15	7.5	29.2	6.93	2.01	1219	210	1290	135
150x90	15	26.6	12	6.0	33.9	5.21	2.23	761	205	841	126
	12	21.6	12	6.0	27.5	5.08	2.12	627	171	694	104
	10	18.2	12	6.0	23.2	5.00	2.04	533	146	591	88.3
150x75	15	24.8	12	6.0	31.7	5.52	1.81	713	119	753	78.6
	12	20.2	12	6.0	25.7	5.40	1.69	589	99.6	623	64.7
	10	17.0	12	6.0	21.7	5.31	1.61	501	85.4	531	55.1
125x75	12	17.8	11	5.5	22.7	4.31	1.84	354	95.5	391	58.5
	10	15.0	11	5.5	19.1	4.23	1.76	302	82.1	334	49.9
	8	12.2	11	5.5	15.5	4.14	1.68	247	67.6	274	40.9
100x75	12	15.4	10	5.0	19.7	3.27	2.03	189	90.2	230	49.5
	10	13.0	10	5.0	16.6	3.19	1.95	162	77.6	197	42.2
	8	10.6	10	5.0	13.5	3.10	1.87	133	64.1	162	34.6
▶ 100x65	10	12.3	10	5.0	15.6	3.36	1.63	154	51.0	175	30.1
▶	8	9.9	10	5.0	12.7	3.27	1.55	127	42.2	144	24.8
▶	7	8.8	10	5.0	11.2	3.23	1.51	113	37.6	128	22.0

Dimensions and properties to BS EN 10056-1:1999.

▶ These dimensions are in addition to our standard range to the BS EN 10056-1:1999 specification.

* Sections in italics may become slender under axial compression.

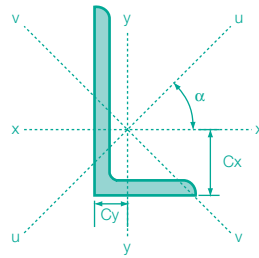
Steel in action:



Recycled steel turns up virtually everywhere. When Corus demolished a redundant plant on Teesside, the 20,000 tonnes of recovered steel were tracked through the recycling process to its new uses.

Structural sections went to Heathrow Terminal 5 and the new stand at the Oval. Some was used in the manufacture of steel plate for the construction of buildings over Paddington railway station in London.

Building material	Weight available	Weight recovered	Type of recycling	Use
Steel sections and cladding	20,000 tonnes	20,000 tonnes	Recycled	Recycled back into new steel products
Concrete	10,000 tonnes (excluding some foundations)	10,000 tonnes	Downcycled	Crushed and used for ground levelling and infilling on site
Rebar	45 tonnes	45 tonnes	Recycled	Recycled back into new steel products



UKA

Radius of gyration				Angle Axis x-x to axis u-u $\tan \alpha$	Elastic modulus		Torsional constant J cm^4	Equivalent slenderness coefficient		Mono-symmetry index ψ_a	Indicative P_{cy}^* values for Advance275 for $L_e=3.5\text{m}$ kN	Designation	
Axis x-x cm	Axis y-y cm	Axis u-u cm	Axis v-v cm		Axis x-x cm^2	Axis y-y cm^2		Min. ϕ_a	Max. ϕ_a			Thickness t mm	Serial size A x B mm x mm
6.29	4.37	6.97	3.22	0.549	174	103	67.9	2.93	3.72	4.60	813	18	200x150
6.33	4.40	7.00	3.23	0.551	147	86.9	39.9	3.53	4.50	5.55	700	15	
6.36	4.44	7.04	3.25	0.552	119	70.5	20.9	4.43	5.70	6.97	445	12	
6.40	2.64	6.59	2.12	0.260	137	38.4	34.3	3.54	5.17	9.19	327	15	200x100
6.43	2.67	6.63	2.14	0.262	111	31.3	18.0	4.42	6.57	11.5	250	12	
6.46	2.68	6.65	2.15	0.263	93.3	26.3	10.7	5.26	7.92	13.9	179	10	
4.74	2.46	4.98	1.93	0.354	77.7	30.4	26.8	2.58	3.59	5.96	221	15	150x90
4.78	2.49	5.02	1.94	0.358	63.3	24.8	14.1	3.24	4.58	7.50	181	12	
4.80	2.51	5.05	1.95	0.360	53.3	21.0	8.30	3.89	5.56	9.03	154	10	
4.75	1.94	4.88	1.58	0.253	75.2	21.0	25.1	2.62	3.74	6.84	147	15	150x75
4.78	1.97	4.92	1.59	0.258	61.3	17.1	13.2	3.30	4.79	8.60	120	12	
4.81	1.99	4.95	1.60	0.261	51.7	14.5	7.8	3.95	5.83	10.4	103	10	
3.95	2.05	4.15	1.61	0.354	43.2	16.9	11.6	2.66	3.73	6.23	108	12	125x75
3.97	2.07	4.18	1.61	0.357	36.5	14.3	6.87	3.21	4.55	7.50	91.2	10	
4.00	2.09	4.21	1.63	0.360	29.6	11.6	3.62	4.00	5.75	9.43	74.3	8	
3.10	2.14	3.42	1.59	0.540	28.1	16.5	10.0	2.10	2.64	3.46	92.1	12	100x75
3.12	2.16	3.45	1.59	0.544	23.8	14.0	5.95	2.54	3.22	4.17	77.6	10	
3.14	2.18	3.47	1.60	0.547	19.3	11.4	3.13	3.18	4.08	5.24	63.8	8	
3.14	1.81	3.35	1.39	0.410	23.2	10.5	5.61	2.52	3.43	5.45	57.4	10	100x65
3.16	1.83	3.37	1.40	0.413	18.9	8.54	2.96	3.14	4.35	6.86	47.3	8	
3.17	1.83	3.39	1.40	0.415	16.6	7.53	2.02	3.58	5.00	7.85	41.7	7	

More plate was fabricated into large girders used on the construction of the A249 bridge to the Isle of Sheppey in Kent. And some was even used in the manufacture of galvanised strip steel to make light steel-framed houses. Other uses included copper-plated coins and automotive parts.

Recycling this steel saved enough energy to supply 3,700 households with all their energy requirements for a year.



Ford Transit



Copper-plated coins



Heathrow Terminal 5



Paddington



The Sheppey Crossing, Kent

www.corusgroup.com

Trademarks of Corus
Advance, UKA, UKB, UKC and UKPFC
are trademarks of Corus

Care has been taken to ensure that this information is accurate, but Tata Steel UK Limited, including its subsidiaries, does not accept responsibility or liability for errors or information which is found to be misleading.

Copyright 2008
Corus

Corus cares about the environment – this brochure is printed with biodegradable vegetable inks and using material with at least 80% recycled content.

Corus
T +44(0) 1724 405060
www.corusconstruction.com

RS:5000 UK10/2008