

ISD DUNAFERR PRODUCT CATALOGUE

COLD BENT STEEL SECTIONS

Planning, production and sales of all products are realized in quality and environment management systems certified to the standards ISO 9001:2000 and ISO 14001:2004.

The manufacturer operates an occupational health and safety management system according to the specifications of OHSAS 18001:2007 standard.

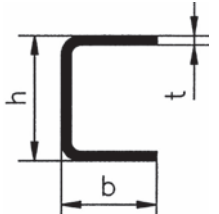
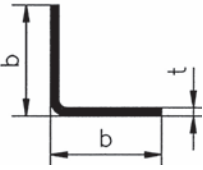
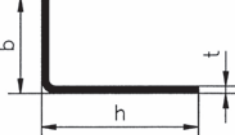
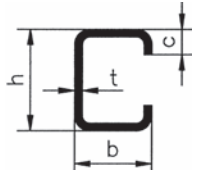
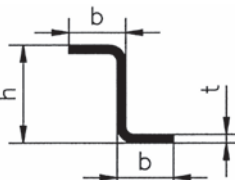
Quality certificates of products bound to CE-mark for applications in the building industry are possessed.

MAIN CHARACTERISTICS OF COLD BENT STEEL SECTIONS

The technical delivery requirements of cold bent steel sections meet the following regulations

Product groups		General technical requirements	Dimensions
Open steel sections	for general purpose and for steel structures	EN 10162	ISD Dunafer product catalogue or separate agreement
	for special purpose	separate agreement	
Hollow steel sections	for general purpose	EN 10305-3, EN 10305-5	
	for steel structures	EN 10219-1	EN 10219-2
	for special purpose	separate agreement	

Choice of generally used open steel sections

Main product groups		Overall dimensions min-max (mm)			
		h	b	c	t
U Cold bent steel U section		20-250	20-110	—	1.5-6.0
L Cold bent equal sided steel L section		30-140	30-140	—	2.0-5.0
L Cold bent unequal sided steel L section		40-180	20-100	—	2.0-5.0
C Cold bent steel C section		40-200	25-75	10-45	2.0-5.0
Z Cold bent steel Z section		50-180	25-60	—	2.0-4.0

CHOICE OF ROUND HOLLOW SECTIONS FOR GENERAL PURPOSE AND FOR STEEL STRUCTURES

Outside diameter mm	Unit mass, kg/m, (according to EN 10305-3; EN 10219-2 standards) if the thickness is in mm										
	1,0	1,25	1,5	1,8	2,0	2,5	3,0	3,2	3,6	4,0	4,6
16,0	0,370	0,455	0,536	0,630							
18,0	0,419	0,516	0,610	0,719							
19,0	0,444	0,547	0,647	0,764							
20,0	0,469	0,578	0,684	0,808							
21,3	0,501	0,618	0,732	0,866	0,952	1,159					
22,0	0,518	0,640	0,758	0,897							
25,0	0,592	0,732	0,869	1,030	1,134	1,387					
26,9	0,639	0,791	0,940	1,114	1,228	1,504					
28,0	0,666	0,825	0,980	1,163							
32,0	0,764	0,948	1,128	1,341	1,480	1,819					
33,5	0,801	0,994	1,184	1,407	1,554	1,911	2,256				
38,0	0,912	1,133	1,350	1,607	1,776	2,189	2,589				
39,8	0,957	1,188	1,417	1,687							
42,4			1,513	1,802	1,993	2,460	2,915	3,094			
44,5			1,591	1,895	2,096	2,589	3,070				
48,25			1,729	2,062	2,281	2,821	3,348	3,555			
49,8	1,203	1,497	1,787	2,131							
51,0			1,831	2,184	2,417	2,990	3,551	3,772	4,208	4,636	
57,0				2,450	2,713	3,360	3,995				
60,0			2,164	2,583	2,861	3,545	4,217	4,482	5,007	5,524	
63,5				2,739	3,033	3,761	4,476	4,759	5,318	5,869	
70,0					3,354	4,162	4,957	5,272	5,895	6,511	
76,1					3,655	4,538	5,408	5,753	6,437	7,112	8,111
88,9					4,286	5,327	6,355	6,763	7,573	8,375	9,563
95,0						5,703	6,806	7,244	8,114	8,977	10,255
101,6						6,110	7,295	7,765	8,700	9,628	11,004
108,0						6,504	7,768	8,270	9,269	10,259	11,730
114,3						6,893	8,234	8,767	9,828	10,881	12,445
127,0							9,174	9,770	10,955	12,133	13,885
133,0							9,618	10,243	11,488	12,725	14,566

The following limitations refer to the outside diameter tolerance of round hollow sections for general purpose: the tolerance value is $\pm 1\%$ of the nominal diameter, which includes the deviation from round shape too.

The following limitations refer to the dimension choice of the sections for steel structures: round steel sections are made exclusively of hot-rolled base material with the thickness of minimum 2 mm, the outside diameter is minimum 21,3 mm.

CHOICE OF RECTANGULAR HOLLOW STEEL SECTIONS FOR GENERAL PURPOSE

h x b mm	Unit mass, kg/m, (according to EN 10305-5 standard) if the thickness is in mm									
	1,0	1,25	1,5	1,8	2,0	2,5	3,0	3,6	4,0	4,6
15x15, 20x10	0,438	0,537	0,632	0,741						
20x15, 25x10	0,516	0,635	0,750	0,882						
20x20	0,595	0,733	0,868	1,023	1,124					
25x15, 30x10	0,595	0,733	0,868	1,023						
30x15	0,673	0,831	0,985	1,165						
25x25, 30x20	0,752	0,930	1,103	1,306	1,438	1,756				
40x10	0,752	0,930	1,103	1,306						
30x30, 40x20	0,909	1,126	1,339	1,588	1,752	2,148	2,392			
35x25	0,909	1,126	1,339	1,588						
35x35, 40x30 50x20		1,322	1,574	1,871	2,066	2,541	2,863			
50x25		1,420	1,692	2,012	2,223	2,737	3,098			
40x40, 50x30		1,518	1,810	2,154	2,380	2,933	3,334	3,896	4,252	
60x20			1,810	2,154	2,380	2,933	3,334			
45x45, 50x40 60x30, 65x25				2,436	2,694	3,326	3,805			
50x50, 60x40 70x30				2,719	3,008	3,718	4,276	5,027	5,508	
60x50, 70x40 80x30				3,001	3,322	4,111	4,747	5,592	6,136	
60x60, 70x50				3,284	3,636	4,503	5,218	6,157	6,764	7,646
80x40				3,284	3,636	4,503	5,218	6,157	6,764	
80x50					3,950	4,896	5,689	6,722	7,392	8,368
90x40					3,950	4,896	5,689	6,722	7,392	
70x70, 80x60 90x50					4,264	5,288	6,160	7,288	8,020	9,090
100x40					4,264	5,288	6,160	7,288	8,020	
90x60, 100x50					4,578	5,681	6,631	7,853	8,648	9,812
80x80, 90x70 100x60						6,073	7,102	8,418	9,276	10,534
120x40						6,073	7,102	8,418	9,276	
90x90, 100x80 120x60, 130x50						6,858	8,044	9,548	10,532	11,979
100x100, 120x80							8,986	10,679	11,788	13,423
150x60, 140x70							9,457	11,243	12,416	14,145

CHOICE OF RECTANGULAR HOLLOW STEEL SECTIONS FOR STEEL STRUCTURES

h x b mm	Unit mass, kg/m, (according to EN 10219-2 standard) if the thickness is in mm					
	2,0	2,5	3,0	3,6	4,0	4,6
20x20	1,050					
25x25, 30x20	1,364	1,640				
30x30, 40x20	1,678	2,032	2,362			
35x35, 40x30 50x20	1,992	2,425	2,833			
50x25	2,149	2,621	3,068			
40x40, 50x30	2,306	2,817	3,304	3,853	4,198	
60x20	2,306	2,817	3,304			
45x45, 50x40 60x30, 65x25	2,620	3,210	3,775			
50x50, 60x40 70x30	2,934	3,602	4,246	4,983	5,454	
60x50, 70x40 80x30	3,248	3,995	4,717	5,548	6,082	
60x60, 70x50	3,562	4,387	5,188	6,114	6,710	7,574
80x40	3,562	4,387	5,188	6,114	6,710	
80x50	3,876	4,780	5,659	6,679	7,338	8,297
90x40	3,876	4,780	5,659	6,679	7,338	
70x70, 80x60 90x50	4,190	5,172	6,130	7,244	7,966	9,019
100x40	4,190	5,172	6,130	7,244	7,966	
90x60, 100x50		5,565	6,601	7,809	8,594	9,741
80x80, 90x70 100x60		5,957	7,072	8,374	9,222	10,463
120x40		5,957	7,072	8,374	9,222	
90x90, 100x80 120x60, 130x50		6,742	8,014	9,505	10,478	11,908
100x100, 120x80			8,956	10,635	11,734	13,352
150x60, 140x70			9,427	11,200	12,362	14,074

STEEL GRADES FREQUENTLY USED FOR MANUFACTURING

The base material of cold bent steel sections is generally cold or hot rolled steel strip with the yield point of at least 235 N/mm².

Symbol of steel grade	Related standards	
	number	title
S235JR (St 37-2) ^{1) 3)}	EN 10025-2	Hot rolled products from structural steels Part 2: Technical terms of delivery of unalloyed structural steels
E235 ^{2) 3)}	EN 10305-3	Precision steel tubes. Technical terms of delivery Part 3: Welded, cold formed tubes
	EN 10305-5	Precision steel tubes. Technical terms of delivery Part 5: Welded, cold formed, square and rectangular tubes
S235JRH ^{2) 3)}	EN 10219-1	Cold formed, welded, hollow sections for the production of steel structures, from unalloyed and fine-grained steels Part 1: Technical terms of delivery

¹⁾ The symbols according to the previous standard are in the brackets.

²⁾ The way of deoxidation is killed steel.

³⁾ The Si content required by the user must be known to make sure that the steel grades can be galvanized.

The most common Si content is maximum 0,03% proposed also by us.

Detailed choice of dimensions and sectional characteristics of cold bent steel sections are included in the product catalogue titled „Cold Bent Steel Sections” of ISD Dunafer Zrt.

We undertake to meet special demands based on a separate agreement.

CUTTING TO PRECISE LENGTH

Size limits of hollow steel sections to be cut-to-precise length

Outside dimension of section (mm)		With burring	Without burring
Outside diameter of round hollow steel section, mm	min.	∅ 12	∅ 12
	max.	∅ 80	∅ 95
Outside diameter of square hollow steel section (b x b), mm	min.	□ 15x15	□ 15x15
	max.	□ 60x60	□ 80x80
Outside diameter of rectangular hollow steel section (h x b), mm	min.	□ 20x10 ¹⁾	□ 20x10
	max.	□ 50x30 ¹⁾	□ 90x70
Wall thickness	According to the choice of dimensions		

¹⁾ The base level cannot be longer than twice the height.

Dimensional limits of the precise length: with burring 130–4500 mm
without burring 30–4500 mm

Welding seam

The welding bead of the hollow steel sections is finished outside and it is not removed inside. The welding seam of rectangular sections is on the longer side of the section.

Delivery condition

Steel sections are not tempered after cold-forming.

On the outside and inside surface of steel sections emulsion residues deriving from manufacturing, as well as smaller iron stains are allowed. An oil coat providing temporary corrosion protection is applied during the manufacturing process on the outside surface of steel sections, the omission of which has to be agreed on separately. The fulfilment of any demand regarding hot dip galvanizing or other special requirement has to be agreed on at the time of order.

Length

Length limits: 5000–12 000 mm
Typical length: 6000 mm

Surface

The smoothness of the surface of cold bent steel sections is in accordance with the base material used for production. Visible cracks are not permitted on the surface of bent edges. Longitudinal scratches, indentations and roll impressions developed on the surface of steel sections as a result of bending — not exceeding the section thickness tolerance value — cannot be claimed.

Bundling

In lack of other agreement the mass of the bundle in case of open and hollow steel sections is between 1.0–2.5 tonne(s). Several bundles tied together can be conveyed by crane too. The possible packing of the bundles has to be agreed on separately.

Types of test certificates, CE-mark

The issue of types of test certificates according to the standard EN 10204 can be agreed on taking the limitations of product standards into account. In default of other agreement the Quality Identity Certificate of Type 2.2 is issued. The products manufactured in accordance with the standards EN 10219-1, EN 10219-2 and EN 10162, as well as with the certificate of conformity of LGA Bautechnik GmbH are supplied with CE-marking.

ISD DUNAFERR DANUBE IRONWORKS PRIVATE COMPANY LIMITED BY SHARES

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