STRUCTURAL STEEL - DATA AND SPECIFICATIONS

OVERVIEW OF STRUCTURAL STEEL

Structural steel is a hot-rolled, low-carbon, high-strength steel widely used in construction, industrial fabrication and mechanical engineering. It offers high tensile strength, toughness, durability, and excellent weldability, making it ideal for load-bearing and structural applications.

STRUCTURAL STEEL

Structural steel is supplied in multiple forms and shapes, each designed for specific requirements. The main types include:

Type	Description
Hot Rolled Mild Steel Plate	Flat plates for fabrication, bridges, and structural bases.
Universal Beams (UB)	Lightweight beams for horizontal load support in frames and floors.
Universal Columns (UC)	Heavier UC shaped sections for vertical load-bearing applications.
Mild Steel Tubes	Round tubes for mechanical and structural uses.
Circular Hollow Sections (CHS)	Hollow round sections for columns and frames.
Rectangular Hollow Sections (RHS)	Rectangular hollow sections for frames and structural members.
Square Hollow Sections (SHS)	Square hollow sections for columns, trusses and supports.
Mild Steel Flats	Rectangular flat bars for brackets, fabrication, and general reinforcement.
Mild Steel Channels (C-Section)	C-shaped sections for secondary structural supports.
Mild Steel Square Bars	Solid square bars for shafts, supports, and fabricated components.
Equal Angles (L-Shaped)	Symmetrical angles for bracing, frames, and reinforcement.
Unequal Angles (L-Shaped)	Asymmetrical angles for structural framing and reinforcement in irregular layouts.

STANDARD GRADES

Chargentum supplies S275 and S355 structural steels suitable for general engineering and heavy duty applications:

Grade	Description	Minimum Yield Strength (MPa)	Tensile Strength (MPa)	Typical Use
S235	General structural steel	235	360–510	Light construction, non-critical members
S275	General purpose structural steel	275	410–530	Bridges, industrial structures, machinery, fabrication
S355	High-strength structural steel	355	510–680	Heavy duty beams, columns, crane rails, bridge

Notes:

- All grades are weldable and formable
- Charpy impact testing can be applied at +20°C, 0°C, or -20°C depending on design requirements.

CHEMICAL COMPOSITION (TYPICAL MAXIMUM % BY MASS)

Element	S275	S355
Carbon (C)	0.21	0.24
Manganese (Mn)	1.5	1.6
Phosphorus (P)	0.035	0.035
Sulfur (S)	0.035	0.035
Silicon (Si)	0.30	0.55
Other Alloying Elements	≤0.05	≤0.05

MECHANICAL PROPERTIES

Property	S275	S355	Notes
Minimum Yield Strength	275MPa	355MPa	Stress at which permanent deformation occurs
Tensile Strength	410–530 MPa	510–680 MPa	Maximum load before failure
Elongation	≥20%	≥20%	Ductility before fracture
Charpy Impact Energy	27 J at +20°C	27 J at -20°C	Resistance to brittle fracture
Modulus of Elasticity	210,000 MPa	210,000 MPa	Material stiffness
Poisson's Ratio	0.30	0.30	Lateral contraction vs. longitudinal extension
Density	7,850 kg/m³	7,850 kg/m³	Mass per cubic meter

DELIVERY CONDITIONS

Condition	Description
As Rolled	Standard hot rolled plates and sections
Normalized	Heat treated for uniform mechanical properties
Charpy Tested	Toughness tested at +20°C, 0°C, or -20°C
Surface Finish	Mill finish, shot blasted or primed/painted on request
Dimensional Tolerances	EN 10029 for plates, EN 10034 for beams/columns

PHYSICAL & DESIGN PROPERTIES

Property	Value	Notes
Density	7,850 kg/m³	Typical for structural steels
Modulus of Elasticity	210,000 MPa	Stiffness under load
Coefficient of Thermal Expansion	12 × 10⁻⁶ /°C	Linear expansion per °C
Hardness (Brinell)	120–160 HB	Typical for hot rolled steel
Electrical Conductivity	10–13 % IACS	Minor for structural applications

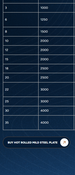
METAL TYPES & APPLICATIONS

HOT ROLLED MILD STEEL PLATE

Hot Rolled Plates are flat sheet stock for fabrication, bridges, and structural bases, available in S275 and S355, 5–25 mm thickness, widths up to 3000 mm.

Thickness (mm)	Width (mm)	Grades	Notes
5	1000	S275, S355	Light fabrication
6	1250	S275, S355	General structural use
8	1500	S275, S355	Industrial plates
10	2000	S275, S355	Heavy duty bases
12	2000	S275, S355	Construction plates
15	2000	S275, S355	Fabrication floors
18	2500	S275, S355	Bridge components
20	2500	S275, S355	Structural bases
22	3000	S275, S355	Machine foundations
25	3000	S275, S355	Large structures
30	3000	S275, S355	Heavy industrial
35	4000	S275, S355	Huge scale applications

BUY HOT ROLLED MILD STEEL PLATE



UNIVERSAL BEAMS (UB)

Universal Beams are primary for horizontal load-bearing applications such as floors, bridges, mezzanines, and structural frameworks.

Chargentum supplies UBs in a comprehensive size range: 127 x 76 x 13 kg/m up to 914 x 419 x 388 kg/m. Most beam sizes are available in S275 or S355 grades. Lengths up to 12 metres are common for most structural load calculations. Grades include S275 and S355.

Depth (mm)	Flange Width (mm)	Weight (kg/m)	Grades	Notes
127	76	13	S275, S355	Light floor beams
152	89	16	S275, S355	Mezzanine supports
178	102	21	S275, S355	Residential frames
203	102	27	S275, S355	Industrial floors
229	146	35	S275, S355	Medium duty bridges
254	146	43	S275, S355	Heavy floors
305	165	54	S275, S355	Factory structures
356	171	67	S275, S355	Warehouse supports
406	178	74	S275, S355	Crane rails & beams
457	191	92	S275, S355	Large span floors
533	191	112	S275, S355	Structural frameworks
914	419	388	S275, S355	Mega scale industrial

BUY UNIVERSAL BEAMS

UNIVERSAL COLUMNS (UC)

Universal Columns are heavier, wider sections than standard beams, often used in multi-storey buildings, industrial frameworks, crane rails, and bridges. They are designed to support high axial loads and can be integrated into structural frames with minimal bracing for complete load distribution.

Chargentum can supply Universal Columns in a comprehensive size range: 152 x 152 x 23 kg/m up to 356 x 406 x 634 kg/m. Most columns are available in several different weight/wall thickness options to meet specific structural requirements. Grades include S275 and S355, and all columns can be cut to size, pre-drilled, and delivered ready for fit.

Depth (mm)	Flange Width (mm)	Weight (kg/m)	Grades	Notes
152	152	23	S275, S355	Light columns
203	203	37	S275, S355	Medium support
254	254	67	S275, S355	Industrial columns
305	305	118	S275, S355	Factory structures
356	368	153	S275, S355	Warehouse verticals
356	406	235	S275, S355	Crane & heavy floors
356	406	340	S275, S355	Bridge supports
356	406	634	S275, S355	Mega columns
610	610	230	S275, S355	Structural frameworks
711	711	290	S275, S355	High rise structures
813	813	370	S275, S355	Heavy duty industrial
914	914	388	S275, S355	Mega scale vertical

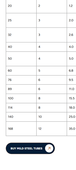
BUY UNIVERSAL COLUMNS

MILD STEEL TUBES

Mild Steel Tubes are widely used in structural, mechanical, and hydraulic applications. They provide strength, rigidity, and corrosion resistance when properly coated or painted. Chargentum supplies a range of mild steel tubes, include hollow sections (CHS), and cold drawn seamless tubes (CDS). S275 and S355 grades. These tubes are ideal for structural frames, hydraulic cylinders, machine components and industrial equipment.

Outer Diameter (mm)	Wall Thickness (mm)	Weight (kg/m)	Grades	Notes
20	2	1.2	S275, S355	Light structural use
25	3	2.0	S275, S355	Frames & supports
32	3	2.6	S275, S355	Medium load applications
40	4	4.0	S275, S355	Structural frames
50	4	5.0	S275, S355	Industrial supports
60	5	6.8	S275, S355	Crane bases
76	6	9.5	S275, S355	Bridge trusses
89	6	11.0	S275, S355	Factory columns
100	8	15.5	S275, S355	High load trusses
114	8	18.0	S275, S355	Mega structures
140	10	25.0	S275, S355	Heavy industrial
168	12	35.0	S275, S355	Large scale construction

BUY MILD STEEL TUBES



HOLLOW SECTIONS - RECTANGULAR, CIRCULAR, AND SQUARE

Hollow sections are widely used in construction, industrial frames, and mechanical structures. They offer high strength-to-weight ratio, excellent weldability, and versatility for columns, beams, frames, and supports. Chargentum supplies Rectangular Hollow Sections (RHS), Circular Hollow Sections (CHS), and Square Hollow Sections (SHS) in S275 and S355 grades, with multiple standard dimensions available for all structural applications.

RECTANGULAR HOLLOW SECTIONS (RHS)

Width (mm)	Height (mm)	Wall Thickness (mm)	Weight (kg/m)	Grades	Notes
50	25	3	3.0	S275, S355	Frames
50	50	4	5.7	S275, S355	Medium supports
75	50	4	7.8	S275, S355	Floor framing
100	50	4	9.2	S275, S355	Industrial frames
100	100	6	16.3	S275, S355	Columns & trusses
125	75	6	16.1	S275, S355	Heavy duty frames
150	100	6	21.4	S275, S355	Crane bases
200	100	8	30.8	S275, S355	Factory structures
200	150	10	50.1	S275, S355	Bridge supports
250	150	10	60.0	S275, S355	High load columns
300	200	12	90.0	S275, S355	High load trusses
400	200	16	112.0	S275, S355	Heavy industrial support

BUY RECTANGULAR HOLLOW SECTIONS

CIRCULAR HOLLOW SECTIONS (CHS)

Outer Diameter (mm)	Wall Thickness (mm)	Weight (kg/m)	Grades	Notes
20	2	1.2	S275, S355	Light columns
25	3	2.3	S275, S355	Medium columns
32	3	2.8	S275, S355	Frames & trusses
40	4	4.0	S275, S355	General structural
50	4	5.0	S275, S355	Industrial supports
60	5	6.8	S275, S355	Heavy duty frames
76	6	9.5	S275, S355	Crane and bridge
89	6	11.0	S275, S355	Factory columns
100	8	15.5	S275, S355	High load trusses
114	8	18.0	S275, S355	Mega structures

140	10	25.0	S275, S355	Heavy industrial
168	12	35.0	S275, S355	Large-scale construction

BUY CIRCULAR HOLLOW SECTIONS

SQUARE HOLLOW SECTIONS (SHS)

Width (mm)	Wall Thickness (mm)	Weight (kg/m)	Grades	Notes
20	2	1.3	S275, S355	Light columns
25	3	2.6	S275, S355	Frames & supports
30	3	3.1	S275, S355	Small structural members
40	4	5.2	S275, S355	Medium frames
50	4	6.5	S275, S355	Industrial supports
60	5	9.0	S275, S355	Crane bases
75	6	13.0	S275, S355	Heavy structural frames
80	6	14.0	S275, S355	Factory columns
90	8	18.5	S275, S355	Bridge supports
100	8	21.0	S275, S355	Large-scale construction
125	10	30.5	S275, S355	Heavy industrial
150	12	42.0	S275, S355	Mega-scale structures

BUY SQUARE HOLLOW SECTIONS

MILD STEEL FLATS

Mild Steel Flats are rectangular solid bars widely used for brackets, machine bases, reinforcement, fabrication, and general structural applications. Their high strength, toughness, and weldability make them ideal for both light and heavy-duty engineering projects. Chargentum supplies Mild Steel Flats in a variety of widths, thicknesses, and lengths, available in S275 and S355 grades. Flats can be cut to size, drilled, welded, and machined for bespoke structural solutions.

Width (mm)	Thickness (mm)	Length (mm)	Weight (kg/m)	Grades	Notes
10	5	6000	0.39	S275, S355	Light fabrication
20	5	6000	0.78	S275, S355	Brackets, supports
25	6	6000	1.18	S275, S355	Small frames
30	8	6000	1.88	S275, S355	General reinforcement
40	10	6000	3.12	S275, S355	Heavy-duty fabrication
50	12	6000	4.71	S275, S355	Machine bases
60	12	6000	5.65	S275, S355	Structural components
75	15	6000	9.44	S275, S355	Industrial frames
80	20	6000	12.6	S275, S355	Medium-load structures
100	20	6000	15.8	S275, S355	Large-scale fabrication
125	25	6000	24.5	S275, S355	Heavy structural reinforcement
150	30	6000	35.3	S275, S355	Mega industrial applications

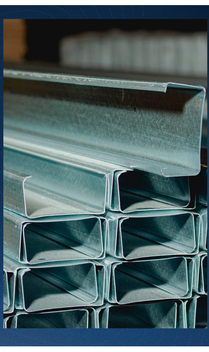
BUY MILD STEEL FLATS

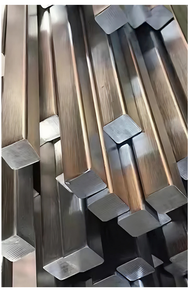
MILD STEEL CHANNELS (C-SECTION)

Mild Steel Channels are C-shaped sections, designed for secondary structural support, floor joists, roof purlins, and industrial frameworks. Their geometry allows efficient load distribution while being easy to weld and bolt into larger structures. Chargentum supplies Channels in S275 and S355 grades, with a wide range of heights, flange widths, and thicknesses, suitable for construction, industrial, and mechanical applications.

Depth (mm)	Flange Width (mm)	Web Thickness (mm)	Weight (kg/m)	Grades	Notes
50	25	3	3.5	S275, S355	Light support
65	33	3	4.8	S275, S355	Medium loads
75	40	4	6.3	S275, S355	Floor joists
90	46	4	7.8	S275, S355	Industrial frames
100	50	5	10.2	S275, S355	Heavy-duty support
120	60	5	12.5	S275, S355	Crane bases
140	70	6	17.0	S275, S355	Bridge supports
160	75	6	19.8	S275, S355	Factory structures
180	80	8	26.0	S275, S355	Large industrial frames
200	90	8	30.3	S275, S355	High-load structures
220	100	10	40.0	S275, S355	Mega-scale construction
250	120	12	55.0	S275, S355	Heavy engineering

BUY MILD STEEL CHANNELS





MILD STEEL SQUARE BARS

Mild Steel Square Bars are a solid, uniform sections used for shafts, supports, fabricated components, and general structural reinforcement. They are easy to cut, drill, and weld, making them ideal for mechanical, construction, and industrial applications. Chargentum supplies Square Bars in S275 and S355 grades, with a variety of sizes and lengths to suit different engineering requirements.

Side Length (mm)	Length (mm)	Weight (kg/m)	Grades	Notes
10	6000	0.62	S275, S355	Light components
12	6000	0.89	S275, S355	Small supports
16	6000	1.58	S275, S355	Brackets & frames
20	6000	2.47	S275, S355	Medium reinforcement
25	6000	3.87	S275, S355	Industrial components
32	6000	5.98	S275, S355	Heavy-duty shafts
40	6000	9.40	S275, S355	Structural bases
50	6000	14.7	S275, S355	Fabrication frames
63	6000	21.9	S275, S355	Mechanical supports
75	6000	30.9	S275, S355	Crane and bridge frames
90	6000	44.2	S275, S355	Large-scale reinforcement
100	6000	54.8	S275, S355	Mega industrial applications

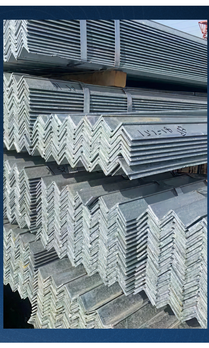
BUY MILD STEEL SQUARE BARS

MILD STEEL EQUAL ANGLES (L-SHAPED)

Equal Angles are symmetrical, L-shaped sections with equal legs, widely used for bracing, frames, reinforcement, and general structural support. Their uniform geometry allows for even load distribution, making them ideal for frames, shelving, trusses, and structural brackets. Chargentum supplies Equal Angles in S275 and S355 grades, available in multiple thicknesses and leg sizes, with cut-to-size and polishing services.

Leg Length (mm)	Thickness (mm)	Length (mm)	Weight (kg/m)	Grades	Notes
25	3	6000	1.1	S275, S355	Light bracing
32	3	6000	1.4	S275, S355	Small frames
40	4	6000	2.0	S275, S355	Reinforcement
50	5	6000	3.2	S275, S355	Structural support
63	6	6000	4.9	S275, S355	Industrial frames
75	6	6000	5.8	S275, S355	Floor bracing
80	8	6000	8.0	S275, S355	Medium-load frames
90	8	6000	9.0	S275, S355	Warehouse structures
100	10	6000	12.0	S275, S355	Heavy-duty frames
125	12	6000	18.9	S275, S355	Crane supports
150	15	6000	27.5	S275, S355	Bridge bracing
200	20	6000	49.0	S275, S355	Mega-scale reinforcements

BUY MILD STEEL EQUAL ANGLES



MILD STEEL UNEQUAL ANGLES (L-SHAPED)

Unequal Angles have asymmetrical legs, allowing for structural framing in layouts where space, load distribution, or fit require non-uniform geometry. They are commonly used in frames, brackets, gantries, and reinforcement, where a larger leg supports higher loads. Chargentum supplies Unequal Angles in S275 and S355 grades, with multiple leg lengths and thicknesses, all cut-to-size and primed for immediate installation.

Short Leg (mm)	Long Leg (mm)	Thickness (mm)	Length (mm)	Weight (kg/m)	Grades	Notes
25	40	3	6000	1.6	S275, S355	Light frames
32	50	3	6000	2.0	S275, S355	Small structural members
40	63	4	6000	3.2	S275, S355	Reinforcement
50	75	5	6000	4.9	S275, S355	Industrial brackets
63	90	6	6000	7.0	S275, S355	Medium load frames
75	100	6	6000	8.5	S275, S355	Floor bracing
80	125	8	6000	12.6	S275, S355	Structural reinforcement
90	150	8	6000	15.0	S275, S355	Heavy-duty frames
100	175	10	6000	21.0	S275, S355	Gantry and crane structures
125	200	12	6000	31.0	S275, S355	Bridge reinforcement
150	225	15	6000	45.0	S275, S355	Mega industrial
200	250	20	6000	72.0	S275, S355	High-load structures

BUY MILD STEEL UNEQUAL ANGLES

DOWNLOAD FULL STRUCTURAL STEEL DATASHEET

Download the complete technical datasheet for Structural Steel (S275 & S355) including:

- Chemical and mechanical properties
- Delivery conditions, tolerances, and finishes
- Full dimension, weight, and grade tables for plates, beams, columns, hollow sections, flats, channels, square bars, and angles

DOWNLOAD STRUCTURAL STEEL PDF

EXPLORE MORE ABOUT CHARGENTUM'S ENGINEERING STEEL, ALLOY STEEL, PERFORATED SHEETS, SEAMLESS TUBES, TOOL STEEL, STAINLESS STEEL, BRASS, COPPER, ALUMINIUM, GREEN STEEL AND METAL GRADES & SPECIFICATIONS

CHARGENTUM
YOUR TRUSTED METAL PARTNER

Trusted Supplier Since 1984
Chartered Institute of Supply Excellence
Member of the Metal Service Center Institute

Company

About Us
Metals
Metal Weight Calculator
Metal Grades & Specifications
Metal Applications
Contact Us

Policies

Terms & Conditions of Sale
Terms & Conditions of Purchase
Health & Safety Policy
Quality Statement
Environmental Policy
Modern Slavery Statement
REACH Statement
Mineral Conflicts Statement

Contact Us

83a James Carter Road,
Industrial, United Kingdom,
IP28 7GE

+44 333 339 5489

sales@chargentum.com

Registered in England & Wales

Company Number:
10500744

Payments

Follow Us

Copyright © 2026 by Chargentum Group Limited. All Rights Reserved.