C-Profiles & Frames

www.dessau.ch

Table of contents

Chapter

Contents:

Profiles & Frames

1

C-Profiles.

Introduction

Cold-rolled C-profiles made from high-quality steel, designed to be assembled into frames forming reliable load-bearing structures.

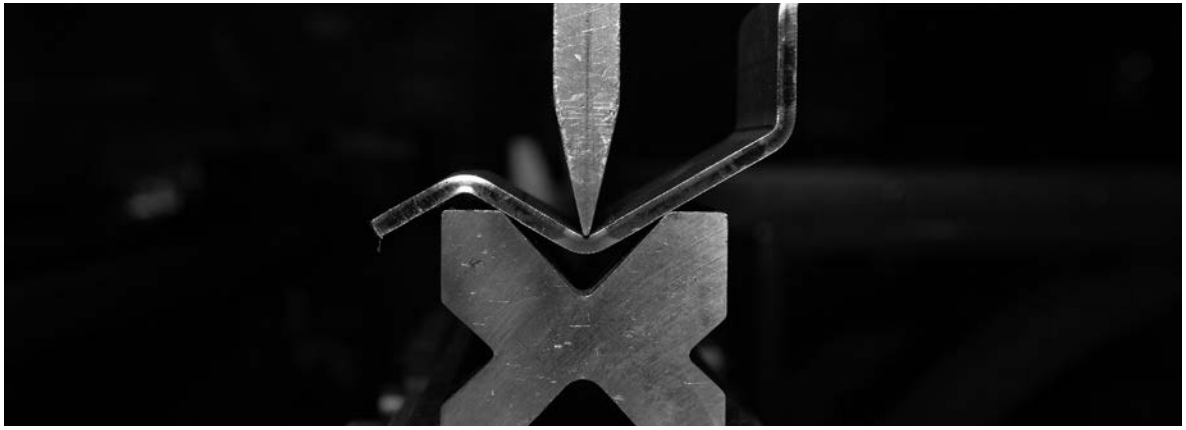
We utilize cold-rolled C-profiles made of high-quality steel, including Magnelis®. Each profile is manufactured to comply with EN 1993-1-3 or CE EN 1993 standards. They are designed to form robust load-bearing structures suitable for a wide range of construction projects. Profiles are easily assembled into frames using self-tapping screws in flanges and pre-drilled holes, ensuring efficiency and precision.

Material & Mechanical Properties

The materials we utilize include **S350GD steel**, offering a unique combination of mechanical properties tailored to meet the demands of various load-bearing applications. These steel grades are fully compliant with **EN 10346** for continuously hot-dip coated steels. S350GD is the preferred choice for LGS because it offers the perfect balance between strength, flexibility, and durability, making it ideal for fast, efficient, and safe construction.

A Yield Strength of 350 N/mm²
Ensuring high load-bearing capacity.

Excellent Ductility
Allowing the material to bend without breaking, which is essential for seismic resistance.



Mechanical Properties of C-Profiles.
Moment of Inertia (I_{xx} and I_{yy}): Resistance to bending and torsion, e.g., up to 1517.27 cm⁴ for I_{xx}.
Elastic Section Modulus (S_x and S_y): Maximized for structural integrity.
Radius of Gyration (r_x and r_y): Calculated for stability, e.g., 3.75 cm for r_x.
High-strength steels compliant with EN 10346, ensuring durability for cold-rolled, hot-dip coated steel.

Magnelis® Coating

Unlike traditional galvanization, Magnelis® is an advanced metallic coating that offers exceptional corrosion resistance and extended durability for steel structures.

Magnelis® was developed by **ArcelorMittal**, the world's leading steel and mining company. Designed as an innovative solution for superior corrosion resistance, it has become the gold standard for steel protection in demanding environments.

Magnelis® is composed of zinc (Zn), aluminum (Al), and magnesium (Mg), forming a self-healing protective layer that extends the lifespan of steel. The most common grades used in LGS are:

ZM250 – Provides robust corrosion resistance for standard applications.
ZM310 – Offers enhanced protection in high-humidity or coastal environments.

Corrosion Resistance and Durability

Lasts 3x longer than traditional galvanization, reducing maintenance costs.
Forms a self-repairing protective layer, preventing rust in cut edges and scratches.
Performs exceptionally well in harsh environments, such as high-moisture and saline conditions.

By using S350GD steel with Magnelis ZM250/ZM310, LGS structures remain highly durable, low-maintenance, and long-lasting even in challenging climates.

ZM250-A-CE (EN 10346)

- Type coating: Magnelis® (zinc, 3.5% aluminium, 3% magnesium)
- Minimum total coating mass, both surfaces: 250 g/m²
- Surface quality: As coated
- Surface treatment: E-passivation®, chromium-free (Cr6+)
- Fire classification: A1 non-combustible (EN 13501-1)

ArcelorMittal

Z275-A-CE Protective Coating

Z275-A-CE is a high-performance zinc coating designed to enhance the durability and corrosion resistance of steel components. Manufactured in compliance with EN 10346, this coating ensures long-term structural integrity in demanding environments.

The Z275 coating provides exceptional corrosion resistance, effectively shielding steel from environmental factors such as moisture, chemicals, and atmospheric pollutants. Its passivated or oiled finish further enhances durability, reducing oxidation and ensuring optimal adhesion for additional coatings or treatments.\

Designed for structural steel applications, Z275-A-CE is ideal for LGS profiles, roofing, facade systems, and other steel construction elements where long-lasting performance and fire safety are critical.

Corrosion Resistance and Durability

The Z275-A-CE zinc coating provides enhanced protection against corrosion, ensuring long-term durability in various environmental conditions. With a minimum coating mass of 275 g/m², it forms a protective barrier that prevents oxidation and extends the lifespan of steel components. The passivated or oiled surface treatment further enhances resistance to moisture, chemicals, and atmospheric pollutants, making it ideal for structural applications requiring high durability and low maintenance.

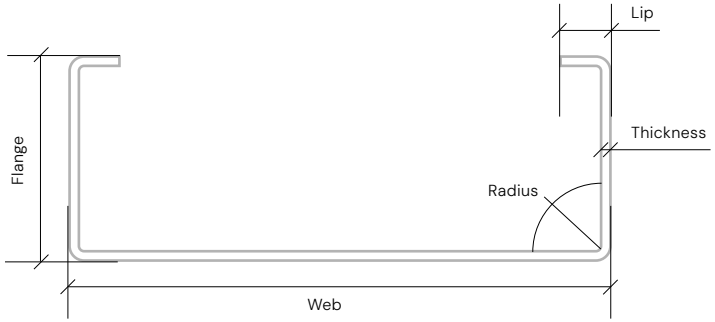
Z275-A-CE (EN 10346)

- Type coating: Zinc coating
- Minimum total coating mass, both surfaces: 275 g/m²
- Surface quality: As coated
- Surface treatment: Passivated or oiled
- Fire classification: A1 non-combustible (EN 13501-1)

Profile Dimensions

Using advanced 3D CAD software, we produce a diverse range of custom-made cold-formed steel profiles through a fully automated production process. These profiles are designed for assembly into light gauge wall frames, C-joist floors, or long-span trusses.

Each steel frame construction is project-specific and engineered in compliance with EN 1993, ensuring it meets the highest standards for resistance, serviceability, durability, and fire safety.



Web (H)	63 - 300mm
Flange (B)	45 - 75mm
Lip (C)	10 - 20mm
Thickness (T)	0.8 - 2.5mm
Radius (R)	2.5mm

Geometry of Profiles

Profile name	H	B	C	T	R	W	A	Strong Axis			Weak Axis			Centroid	
DESSAU nomenclature	mm	mm	mm	mm	mm	kg/m	cm2	I_{xx} (cm^4)	S_x (cm^3)	r_x (cm)	I_{YY} (cm^4)	S_Y (cm^3)	r_Y (cm)	e_x (cm)	y (cm)
C63 × 0.8	63	45	10	0,8	2,5	1,03	0,99	11,66	3,70	3,43	4,60	1,46	2,15	1,90	3,15
C75 × 0.8	75	45	10	0,8	2,5	1,10	1,09	15,27	4,07	3,75	7,353	1,96	2,60	2,52	3,75
C90 × 1.0	90	45	10	1,0	2,5	1,49	1,61	26,62	5,91	4,07	15,37	3,41	3,09	3,29	4,50
C100 × 1.2	100	50	10	1,2	2,5	1,96	2,25	41,68	8,34	4,31	24,88	4,98	3,33	3,72	5,00
C150 × 1.6	150	50	15	1,6	2,5	3,34	4,09	154,69	20,63	6,15	110,29	14,71	5,19	5,94	7,50
C200 × 2.0	200	55	15	2,0	2,5	5,07	6,41	385,17	38,52	7,75	305,97	30,60	6,91	8,40	10,00
C250 × 2.0	250	60	20	2,0	2,5	6,17	7,81	729,48	58,36	9,67	590,28	47,22	8,70	10,50	12,50
C300 × 2.5	300	75	20	2,5	2,5	9,22	11,86	1517,27	101,15	11,31	1251,02	83,40	10,27	12,86	15,00

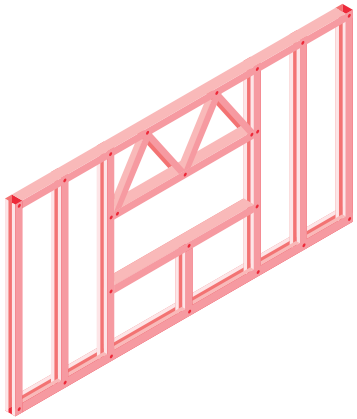
A :Cross section Area [mm^2]
W: Linear mass [kg/m]
R: Radius
CG: Center of gravity

2 Elements.

Design of Vertical Elements (Walls)

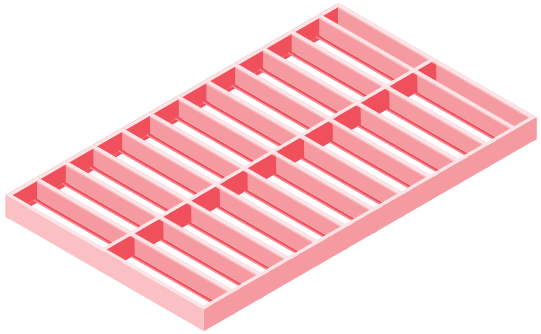
Wall frames (vertical elements) are typically composed of C-sections in various sizes, including C75, C90, C100, and C150, depending on structural requirements. For external walls, we primarily use C150 profiles, ensuring high load-bearing capacity and stability, while C90 is the standard choice for internal walls, offering a balance of strength and efficient space utilization.

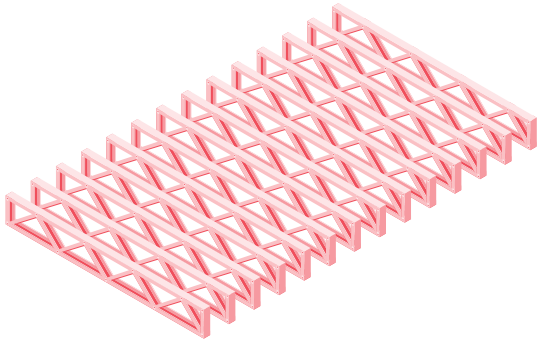
For heavier structures requiring increased load resistance, we implement C200, C250, or C300 profiles, designed to withstand higher forces while maintaining structural integrity. The thickness of the profiles and their center-to-center spacing are determined on a project-specific basis, following a detailed stability report in full compliance with Eurocode 3 standards. This ensures optimal performance, safety, and efficiency in every application.



Design of Horizontal Elements (Floors & Roofs)

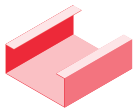
Panels are made from C sections in sizes C150, C200, C250 or C300 while trusses are typically composed of C90 or C75 profiles. Horizontal panels can be assembled in two configurations. Thicknesses and center-to-center distances vary and are determined based on a stability report in compliance with Eurocode 3.





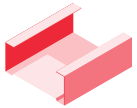
Tool Station Operations

Standalone Operations

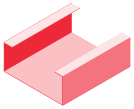


Cut

Swaged Service Hole

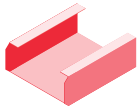


Swage



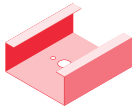
Pre-cut

Cassette System Operations



Chamfer

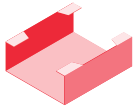
Service hole



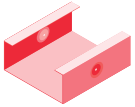
Web & Index Hole

Notch

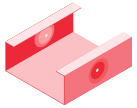
Software Controlled – Auto Adjustable Operations



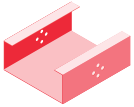
Lip Cut



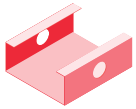
Dimpled Screw/Rivet



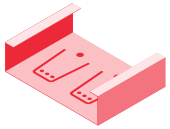
Big Dimpled Screw



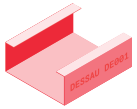
Flange Multi Connection



Bolt Hole



Double Tab



Print Label

3

Info.

Contact information

For media and press inquiries, collaboration requests, or brand-related information, please reach out to us. We are happy to provide press materials, interviews, and insights about DESSAU's innovative approach to modern construction and design.

Address
Gubelstrasse 11
6300 Zug
Switzerland

Bulevar Kralja Petra I 89
21000 Novi Sad
Serbia

Online
sales@dessau.ch
info@dessau.ch

www.dessau.ch

DESSAU Constructions GmbH

Sinisa Cegar
CPO

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