



Hot-dip Galvanized Steel Strip

voestalpine

ONE STEP AHEAD.

Hot-dip Galvanized Steel Strip by voestalpine

Broad range of materials offered,
from ultra-mild to high-strength grades.

High corrosion resistance.

Highest surface quality and
innovative surface treatments.

Hot-dip galvanized steel strip produced by voestalpine Stahl GmbH is characterized by high corrosion resistance, excellent processing properties and a broad range of applications.

The mild steels offered as base materials range from standard grades to ultra-mild deep drawing grades. A wide range of high-strength and advanced high-strength steel grades is available in addition to the structural steel series.

The product range includes zinc, zinc-iron (Galvannealed) and zinc-magnesium coatings.

Main Applications

Automotive Industry

- Inner parts of the car body
- Outer parts of the car body

Household Appliance Industry

- Washing machines
- Stoves, etc.

Construction Industry

- Roof and wall elements
- Interiors
- Air-conditioning
- Sections, etc.

Advantages

- Optimum corrosion protection
- Excellent forming behavior
- Uniform appearance
- Good welding and forming characteristics
- Excellent painting capabilities
- Environmentally friendly

Hot-dip Galvanized Steel Strip with Zinc/Iron-Coatings ("galvannealed")

Improved Welding Quality

Improved production reliability with larger welding area and longer lives of spot welding electrodes.

Direct Painting

Excellent paint adherence even without chemical passivation and/or pre-treatment.

Good Cosmetic Corrosion Behavior

Minimal paint creepage (e. g. in the case of stone chips, scratches).



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Innovative Coating Systems for the Highest Degree of Corrosion Resistance

In the salt-spray test, zinc-magnesium provides a significantly higher level of corrosion protection than zinc, for which reason it is possible to use a thinner zinc-magnesium layer in some applications. In such cases the period of corrosion protection is the same or, in most cases, significantly longer than in cases of steel strip with thicker zinc coatings.

Zinc Coating in g/m² on Both Sides min.

Reference Thickness	Z 150	Z 275	Z 350	Z 450
Layer Thickness corrender coated	ZM 90*	ZM 120	ZM 150	ZM 200*

* Currently the minimum and maximum producible zinc-magnesium layer thickness

The following desirable processing properties are achieved in both hot-dip galvanized steel strip and corrender coated hot-dip galvanized steel strip:

- Weldability
- Paintability
- Formability

There are no limitations with regard to subsequent processing.

Areas of Application

Corrender coated hot-dip galvanized steel strip is used primarily in applications that require high corrosion protection and as a substitution for galvanized steel strip with thick coating layers.

Extended Benefits of Hot-dip Galvanized Corrender Coated Steel Strip

- Higher Level of Scratch Resistance and Surface Appearance Very Similar to That of Z
- Forming: excellent coating adhesion of the zinc-magnesium layer, even on formed components/sections
- Improved paint adhesion on chromium-free passivated surfaces
- Longer value retention of the final product

Steel Grades

Guaranteed Mechanical Properties

Steel Grade	0.2% Yield Strength $R_{p0.2}$ [MPa]	Tensile Strength R_m [MPa]	Fracture Elongation A_{80} [%] (min.)	Vertical Anisotropy r_{90} (min.)	Hardening Exponent n_{10-20} (UE) (min.)	Bake Hardening Value BH_2 [MPa] (min.)	Sample Direction
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Mild Steels

DX51D+Z,ZF	–	270 - 500	22	–	–	–	transv.
DX52D+Z,ZF	140 - 300	270 - 420	26	–	–	–	transv.
DX53D+Z,ZF	140 - 260	270 - 380	30	–	–	–	transv.
DX54D+Z,ZF	120 - 220	260 - 350	36	1.6	0.18	–	transv.
DX56D+Z,ZF	120 - 180	260 - 350	39	1.9	0.21	–	transv.
DX57D+Z,ZF	120 - 170	260 - 350	41	2.1	0.22	–	transv.

Structural Steels

S220GD+Z,ZF	≥ 220	≥ 300	20	–	–	–	long.
S250GD+Z,ZF	≥ 250	≥ 330	19	–	–	–	long.
S280GD+Z,ZF	≥ 280	≥ 360	18	–	–	–	long.
S320GD+Z,ZF	≥ 320	≥ 390	17	–	–	–	long.
S350GD+Z,ZF	≥ 350	≥ 420	16	–	–	–	long.

Micro-alloyed Steels

HX260LAD+Z,ZF	260 - 330	350 - 430	26	–	–	–	transv.
HX300LAD+Z,ZF	300 - 380	380 - 480	23	–	–	–	transv.
HX340LAD+Z,ZF	340 - 420	410 - 510	21	–	–	–	transv.
HX380LAD+Z,ZF	380 - 480	440 - 560	19	–	–	–	transv.
HX420LAD+Z,ZF	420 - 520	470 - 590	17	–	–	–	transv.

Bake-hardening Steels

HX180BD+Z,ZF	180 - 240	290 - 360	34	1.5	0.16	35	transv.
HX220BD+Z,ZF	220 - 280	320 - 400	32	1.2	0.15	35	transv.
HX260BD+Z,ZF	260 - 320	360 - 440	28	–	–	35	transv.
HX300BD+Z,ZF	300 - 360	400 - 480	26	–	–	35	transv.

High-strength IF Steels

HX180YD+Z,ZF	180 - 240	340 - 400	34	1.7	0.18	–	transv.
HX220YD+Z,ZF	220 - 280	340 - 420	32	1.5	0.17	–	transv.
HX260YD+Z,ZF	260 - 320	380 - 440	30	1.4	0.16	–	transv.

Dual-phase Steels

HCT450X+Z,ZF	260 - 340	≥ 450	27	–	0.16	30	transv.
HCT500X+Z,ZF	300 - 380	≥ 500	23	–	0.15	30	transv.
HCT600X+Z,ZF	340 - 420	≥ 600	20	–	0.14	30	transv.
HCT780X+Z,ZF	450 - 560	≥ 780	14	–	–	30	transv.
(HCT980X+Z,ZF)	600 - 750	≥ 980	10	–	–	30	transv.

Complex-phase Steels

(HCT780C+Z)	500 - 700	≥ 780	10	–	–	30	transv.
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TRIP Steels

HCT690T+Z	430 - 550	≥ 690	23	–	0.18	40	transv.
(HCT780T+Z)	470 - 600	≥ 780	21	–	0.16	40	transv.

Notes

- The guaranteed mechanical properties may be limited by the product thickness.
- In some cases modified parameters are valid for zinc/iron coatings.
- The steel grades indicated in (...) are available on request.
- For detailed data, see the Technical Terms of Delivery for hot-dip galvanized steel strip produced by voestalpine.

Types of Coatings and Groups of Layers

Layer Thickness

	Layer Thickness per Side [µm]
Z 100	approx. 7.0
Z 140	approx. 9.8
Z 200	approx. 14
Z 275	approx. 19
Z 350	approx. 24

Layer Group

Z	ZF	ZM
70	70	
100	100	
	120	
150		90
200		
275		120
350		150
450		200

Surface

Product Variant	Normal Surface	Improved Surface	Best Surface
Zinc coating	NA, MA	MB	MC
Zinc/iron coating	RA	RB	RC
Zinc/magnesium coating	NA, MA	MB	-

Surface Re-treatment

Product Variant	Oiled O	Chemically Passivated* C	Chemically Passi- vated* and Oiled CO	Phosphated P	Phosphated and Oiled PO
Zinc coating	✓	✓	✓	✓	✓
Zinc/iron coating	✓	✓	✓	✓	✓
Zinc/magnesium coating	✓	✓	✓	-	-

* RoHS compliant and chromium free

For limitations regarding dimensions see the Technical Terms of Delivery.

Available Shapes and Dimensions

Product Variant	Thickness in [mm]	Width in [mm]	Max. Outer Diameter in [mm]	Approx. Inner Diameter in [mm]
Zinc coating	≤ 0.45 - 3.00	600 - 1,600	2,000	600
Zinc/iron coating	≤ 0.5 - 1.5 (1.8)	600 - 1,600	2,000	600
Zinc/magnesium coating	≤ 0.5 - 1.5 (1.8)	600 - 1,600	2,000	600

Thicknesses up to 3.5 mm on request.

Slit strips and cut sheets are offered by our subsidiary voestalpine Steel Service Center.

Technically More Advanced. Successful Together. voestalpine – The Partner You Can Trust.

High-quality materials are the basis for our products. We strive to be the best partner for our customers and want to provide them with the best-possible solution. We focus our expertise on two aspects: personal contact with dedicated, competent employees and high-quality technically sound methods, products and services.

The companies in the voestalpine Steel Division pledge the following:

- Understanding for the business of our customers
- Dedication to professionalism
- Reliability
- Partnerships based on trust
- Responsibility for satisfactory project completion

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