

# Docol 460LA

## General Product Description

Docol 460LA is available both as hot rolled and cold rolled. Docol HR460LA-UC can after agreement be adapted and delivered as dual certified with S460MC according to EN 10149-2:2010.

### Dimension range

Docol 460LA / UC: thickness 0.50-2.10 mm, width up to 1527mm, length up to 8500 mm.

Docol HR460LA / UC: thickness 2.00-6.00 mm, width up to 1610 mm, length up to 16000 mm.

Docol CR460LA/ GI: thickness 0.80-2.00 mm, width up to 1410 mm, length up to 6000 mm.

Docol CR460LA/ GA&ZA: thickness 0.80-2.00 mm, width up to 1410 mm, length up to 6000 mm. (upon request)

Slitting to narrow coils and cutting to sheets are available upon request.

## Mechanical Properties

Steelgrade	Thickness (mm)	Standards	Coating	Test direction	Yield strength $R_{p0.2}$ (MPa)	Tensile strength $R_m$ (MPa)	Elongation $A_{80}$ (min %)	$n_{10-20/Ag}$ (min)	Min. inner bending radius for 90 °
Docol 460 LA	0.50- 0.50	EN 10268	UC	Transversal	460- 580 <sup>1)</sup>	510- 660	9	-	0.5xt
Docol 460 LA	0.51- 0.70	EN 10268	UC	Transversal	460- 580 <sup>1)</sup>	510- 660	11	-	0.5xt
Docol 460 LA	0.71- 2.00	EN 10268	UC	Transversal	460- 580 <sup>1)</sup>	510- 660	13	-	0.5xt
Docol HR 460LA	2.00- 6.00	VDA 239-100:2016	UC	Longitudinal	460- 560	520- 640	16	-	0.7xt
Docol CR 460LA	0.80- 2.00	VDA 239-100:2016	GI , GA*, ZA*	Longitudinal	460- 580	520- 680	15	0.10	1.0xt <sup>2)</sup>

1) If the yield strength is pronounced, the values apply to the lower yield point ReL.

2) The value apply to steel when bending angle is 90°. In some cases tight bending radius may cause micro-cracking of the coating in the bend area. Where design permits, users are encouraged to employ larger radius.

\* Available on request.

## Chemical Composition

Steelgrade	Product Type	C (max %)	Si (max %)	Mn (max %)	P (max %)	S (max %)	Al (min %)	Ti (max %)	Nb (max %)	Cu (max %)
Docol 460 LA	Uncoated	0.10	0.50	1.60	0.025	0.020	0.015	0.15	0.09	0.20
Docol HR 460LA	Uncoated	0.10	0.50	1.65	0.030	0.025	0.015	0.15	0.10	0.20
Docol HR 460LA	Metal coated	0.13	0.60	1.70	0.030	0.025	0.015	0.15	0.10	0.20

## Tolerances

Cold-rolled (UC): Tolerances in accordance to EN10131.

Hot-rolled (UC): Tolerances in accordance to EN10051.

Hot-dip metal coated: (GI, GA & ZA) Tolerances in accordance to EN10143.

Customized dimensional and shape tolerances are available on request.

## Coatings and surface treatments

### Coatings

The metal coatings options for Docol products include:

**Hot dip zinc coating (GI)** consists almost entirely of zinc (>99%). It is lead free, resulting in a small zinc spangle size. The coating provides good corrosion protection.

**Galvannealed coating (GA)** is a zinc-iron alloy coating having an iron content of approximately 10%. Galvannealed is produced by post-heat treatment in continuous hot-dip coating process. Galvannealed provides excellent resistance weldability and corrosion protection of painted products.

**Galfan coating (ZA)** is a zinc-aluminium alloy coating having the eutectic composition approximately of 95% Zn and 5% Al. Galfan is produced in continuous hot-dip coating process. Galfan has better anticorrosive and forming properties than conventional hot dip zinc coating (GI).

Grade specific availability of metal coated Docol products are given in the Mechanical properties table, coating column.

Type	Coating class	Standard	Closest in EN10346, informative	Coating mass per side, Single spot test (g/m <sup>2</sup> )	Thickness per side, informative (µm)	Density (g/cm <sup>3</sup> )	Surface quality (U = unexposed, E = exposed)
GI	40	VDA239-100	Z100	40- 60 (1)	5,6- 8,5	7,1	U
GI	50	VDA239-100		50- 70 (1)	7,0- 9,9	7,1	U
GI	60	VDA239-100	Z140	60- 90	8,5- 12,7	7,1	U
GI	70	VDA239-100		70- 100	9,9- 14,1	7,1	U
GI	85	VDA239-100		85-115	12,0- 16,2	7,1	U
GI	115	VDA239-100	Z275	115-155	16,2- 21,8	7,1	U
GA	40	VDA239-100	ZF100	40- 60 (1)	5,6- 8,5	7,1	U
GA	50	VDA239-100	ZF120	50- 80	7,0- 11,3	7,1	U
ZA	95	Upon request	ZA95		7	6,6	U
ZA	130	Upon request	ZA130		10	6,6	U

(1) For hot-dipped (GI, ZA, GA) hot rolled (HR) grades, the coating mass tolerance is increased to 30 g/m<sup>2</sup> by increasing the upper limit.

In addition to these coating masses, asymmetric coatings and OEM coating specifications are available upon request.

### Surface treatments

All surface treatments are in accordance with RoHS directive (2011/65/EU) and do not contain Chromium VI (Cr6+). Surface treatments provide only temporary surface protection during transportation and storage. In order to avoid corrosion damages, care must be taken to keep the products dry during transportation and storage. If they become wet, they must be separated and situated so that they are dried quickly.

Surface coating	Available surface treatment
GI, ZA, GA	Chemically passivated (C)
GI, ZA, GA	Oiled (O)
GI, ZA, GA	Chemically passivated and oiled (CO)
GI, ZA, GA	Unprotected (U)
UC (Cold-rolled)	Oiled
UC (Cold-rolled)	Unprotected
UC (Hot-rolled)	Oiled (Only for pickled steel)
UC (Hot-rolled)	Unprotected

## Fabrication and Other Recommendations

For information concerning fabrication, see SSAB's brochures on [www.ssab.com](http://www.ssab.com) or consult Tech Support, [techsupport@ssab.com](mailto:techsupport@ssab.com).

Appropriate health and safety precautions must be taken when bending, welding, cutting, grinding or otherwise working on the product.

## Contact Information

[www.ssab.com/contact](http://www.ssab.com/contact)