SSAB SWEDISH STEEL

DOCOL®

08-12-16 GB8200Docol

Electrogalvanized

Ultra high strength steels

Product

The electrogalvanized ultra high strength steels are cold-rolled, heat-treated in a continuous annealing line and finally electro-galvanized. The steel sheet can be supplied with zinc coating from 2.5-10.0 µm, two sides, with appropriate post-treatment such as phosphating, chromating or oiling.These steels provide cost efficient solutions for parts requiring high corrosion protection at high strength levels.

The forming characteristics of this material are similar to those of cold rolled ultra high strength steels. All conventional welding methods can be used because of a very clean chemical composition.

Applications

The electrogalvanized steels are for applications requiring ultra high strength and corrosion resistance. Typical applications are safety components in the automotive industry like bumper reinforcements and door beams.

Dimension range

Electrogalvanized ultra high strength steels are available in thickness 0.50-2.10 mm and width up to 1500 mm. Limitations may occur depending on thickness and steel grade.

Tolerances

Electrogalvanized ultra high strength steels are supplied to tolerances in accordance with EN 10131.

Mechanical properties

Steel grade	Yield strength R_{eL} (N/mm²)		Yield strength after bake hardening[1)]	Tensile strength R_m (N/mm²)		Elongation A_{80} %	Min bending radius 90° bend
	min	max	min	min	max	min	
Docol 1000DPZE	700	950	850	1000	1200	7	2.0 xt
Docol 900MZE	700	-	900	900	1100	3	3.0xt
Docol 1200MZE	950	-	1150	1200	1400	3	3.0xt
Docol 1400MZE[2)]	1150	-	1350	1400	1600	3	3.0xt
Docol 1500MZE[3)]	1200	-	-	1500	1700	3	3.0x[t]

The mechanical properties are valid in transverse direction of rolling

t = Sheet thickness

1) BH = bake hardening after 2% plastic deformation and heated to 170° C

2) Can be achieved at request

3) Under development

Chemical composition

(typical values)

Steel grade	C %	Si %	Mn %	P %	S %	Al_{tot} %	Nb %	Ti %
Docol 1000DPZE	0,15	0,50	1,50	0,010	0,002	0,040	0,015	-
Docol 900MZE	0,05	0,20	2,00	0,010	0,002	0,040	-	-
Docol 1200MZE	0,11	0,20	1,70	0,010	0,002	0,040	0,015	0,025
Docol 1400MZE	0,17	0,20	1,40	0,010	0,002	0,040	0,015	0,025
Docol 1500MZE	0,21	0,20	1,10	0,010	0,002	0,040	0,015	0,025

Zinc coatings

Coating designation	Nominal zink coating values for each surface		Minimum zink coating values for each surface	
	Thickness µm	Mass g/m²	Thickness µm	Mass g/m²
ZE 25/25	2,5	18	1,7	12
ZE 50/50	5,0	36	4,1	29
ZE 75/75	7,5	54	6,6	47
ZE 100/100	10,0	72	9,1	65

Electrogalvanized ultra high strength steels are available in following zinc coatings:

Steel grade	ZE 25/25	ZE 50/50	ZE 75/75	ZE 100/100
Docol 1000DPZE	X	X	X	X
Docol 900MZ E	-	X	X	X
Docol 1200MZE	-	X	X	x
Docol 1400MZE	-	X	X	X
Docol 1500MZE	-	X	X	X

*) In the course of development

Surface treatment

Steel grade	Surface treatment
Docol 1000DPZE	Rust preventive oil Quaker 6130 (1-2 g/m² on each side) Rust preventive oil Fuchs 4107 (1-2 g/m² on each side) Organic coating EASYFILM (without Cr)*** Phosphating Bi- cation, 1,7 +/- 0,3 gr/m²
Docol 900MZE	
Docol 1200MZE Docol 1400MZE	Rust preventive oil Quaker 6130 (1-2 g/m² on each side) Rust preventive oil Fuchs 4107 (1-2 g/m² on each side) Phosphating Bi- cation, 1,7 + /- 0,3 gr/m²
Docol 1500MZE	

*** Available in thickness <= 1,0 mm and vidth <= 1300 mm

Hydrogen embrittlement

Electrogalvanized ultra high strength steels are not sensitive to hydrogen embrittlement according to an internal test, even without baking treatments after electroplating.In this test an electrogalvanized sample (240x20 mm) is prepared with Charpy V- notches on both sides. The specimen is loaded to 80% of the tensile strength. If failure doesn't occur within seven days the steel is not sensitive to hydrogen embrittlement.

Technical service and information

Knowledge Service Center will be pleased to assist with additional information concerning this product from SSAB Tunnplåt.

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