SSAB Domex - Metal coated structural steels

General Product Description

Metal coated SSAB Domex structural steels are widely used by construction industry in various profiled building components, for example in load-bearing sheets and corrugated profiles, purlins and nail plates. The product offering features metal coated structural steels in grades with a minimum yield strength from 220 to 350 MPa with Zinc (Z), Galfan (ZA) or Galvannealed (ZF) coating. Galvanic corrosion protection of metal coated SSAB Domex enables a long service life for end products that are used under corrosive conditions. This makes these metal coated grades ideal for big installations, like solar panel racks or silos. These steel grades comply with EN10346:2015 standard and exceed the standard requirements by better formability and more consistent properties, which increase the productivity in workshop thanks to the stable forming result.

Mechanical Properties

	Coating	Standard	Yield strength R_e [1] (min MPa)	Tensile strength R_m (min MPa)	Elongation A_{80} [2] (min %)
SSAB Domex 220GD	Z, ZA, ZF	EN10346:2015	220	300	21
SSAB Domex 250GD	Z, ZA, ZF	EN10346:2015	250	330	20
SSAB Domex 280GD	Z, ZA, ZF	EN10346:2015	280	360	19
SSAB Domex 320GD	Z, ZA, ZF	EN10346:2015	320	390	18
SSAB Domex 350GD	Z, ZA, ZF	EN10346:2015	350	420	17

[1] If the yield point is pronounced, the values apply to the upper yield point R_{eH}.
[2] Decreased minimum elongation A_{80} values apply to thicknesses 0.50mm < t ≤ 0.70mm (minus 2 units) and t ≤ 0.50mm (minus 4 units).

Mechanical testing

Testing direction of metal coated structural steels is longitudinal to the rolling direction.

Each metal coated mother coil is regarded as one test unit. Mechanical properties (EN-ISO 6892-1:2009) and coating mass (EN 10346) are determined per test unit.

An inspection document of the required type according to EN 10204 is provided when agreed in the order.

Chemical Composition

	C (max %)	Si (max %)	Mn (max %)	P (max %)	S (max %)
SSAB Domex 220GD	0.20	0.60	1.70	0.10	0.045
SSAB Domex 250GD	0.20	0.60	1.70	0.10	0.045
SSAB Domex 280GD	0.20	0.60	1.70	0.10	0.045
SSAB Domex 320GD	0.20	0.60	1.70	0.10	0.045
SSAB Domex 350GD	0.20	0.60	1.70	0.10	0.045

Content % by mass. Metal coated structural steels are aluminium killed.

Tolerances

The tolerances of metal coated products are mainly in accordance with standard EN 10143:2006. If no special instructions are given on the order, products are delivered with the normal tolerances of this standard. Special tolerances according to standard EN 10143:2006 or other tolerance specification can be agreed separately at the time of order.

Coating and Surfaces

Coatings

The metal coated products are offered with Zinc (Z), Galfan zinc-aluminium (ZA), or Galvannealed zinc-iron alloy (ZF) coating. The cathodic corrosion protection of these metal coatings is in direct proportion to its thickness, i.e. a thick coating will provide better corrosion protection for the underlying steel than a thin coating. However, thin coatings are recommended for applications with high formability requirements.

Zinc

The Zinc (Z) coating has a composition consisting almost entirely of zinc (>99%) and is lead free, resulting in finely crystallized zinc spangle that meets high requirements for visual appearance. It is produced by hot-dip galvanizing process. Thanks to the good formability of lead-free coatings, the corrosion protection, for example, in areas which have been bent is good. The small spangle coating is designated by the letter M.

Coating designation	Minimum total coating mass, both surfaces(g/m²)*	Guidance value for coating thickness per surface,typically (µm)
Z100	100	7
Z140	140	10
Z180	180	13
Z200	200	14
Z225	225	16
Z275	275	20
Z350	350	25
Z450	450	32
Z600	600	42

in triple spot test

In addition to these Zinc coating thicknesses defined according to EN10346:2015, the offering contains different asymmetric coatings, coatings with equal coating minimum mass per surface, and other OEM specifications that are available upon request.

Galfan

Galfan (ZA) is a zinc-aluminium alloy coating with the eutectic composition approximately of 95% Zn and 5% Al . This coating has better anticorrosive and forming properties than normal zinc coatings. Galfan coating can be recognized by its bright metallic and mildly cellular-patterned surface. It is produced by hot-dip coating process.

Coating designation	Minimum total coating mass, both surfaces(g/m²)*	Guidance value for coating thickness per surface,typically (µm)
ZA095	95	7
ZA130	130	10
ZA155	155	11
ZA185	185	14
ZA200	200	15
ZA255	255	20
ZA300	300	23

*in triple spot test

In addition to these Galfan coating thicknesses defined according to EN10346:2015, the offering contains different asymmetric coatings, coatings with equal coating minimum mass per surface, and other OEM specifications that are available upon request.

Galvannealed

Galvannealed (ZF) is a zinc-iron alloy coating having an iron content of about 10%. This coating is produced by heat-treatment after continuous hot-dip coating process. ZF coated steels are excellent for resistance welding applications and are designed for use in high-quality painted products. Galvannealed coating can be recognized by its typically grayish, matte surface.

Coating designation	Minimum total coating mass, both surfaces(g/m²)*	Guidance value for coating thickness per surface,typically (µm)
ZF080	80	6
ZF100	100	7
ZF120	120	8
ZF140	140	10

*in triple spot test

In addition to these Galvannealed coating thicknesses defined according to EN10346:2015, the offering contains coatings with equal coating minimum mass per surface, and other OEM specifications that are available upon request.

Surface quality

Normal surface (A)

Imperfections such as pimples, marks, scratches, pits, variations in surface appearance, dark spots, stripe marks and light passivation stains are permissible. Stretch levelling breaks or run-off marks may appear. Coil breaks and stretcher strains may appear as well. A-surface is more shiny than B surface.

Improved surface (B)

Surface quality B is obtained by skin passing. With this surface quality, small imperfections such as stretch levelling breaks, skin pass marks, slight scratches, surface structure, run-off marks and light passivation stains are permissible. Skin-passed B-surface has a matte appearance.

Surface treatment

In order to prevent formation of white rust during transportation or storage, the following surface treatments are available:

Chemical passivation (C)

Unless otherwise agreed, metal coated coils and sheets are delivered as chemically passivated. A thin passivation layer remains on the surface of the steel. The purpose of this is to protect the coating against the formation of white rust during transportation and storage. This treatment is not sufficient, however, for protection under all conditions.

Oiling (O)

If required, oiling can be used instead of chemical passivation. Metal coated products to be painted are recommended to be delivered in oiled condition. The temporary corrosion protection provided by oil is especially dependent on storage time, and therefore long storage times should be avoided with oiled products.

Chemical passivation and oiling (CO)

Both passivation and oiling are also available for maximum surface protection.

Unprotected (U)

In unprotected condition, i.e. without surface treatment, there is a risk for formation of corrosion products and scratches during transportation, storage or handling. The products are supplied without surface treatment only if explicitly required by the customer on its own responsibility.

General about 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. White rust tends to form easily on the surface of bright, newly coated coils or in the space between tightly packed sheets if condensed water or rainwater collects on the surface and is not able to evaporate away quickly. In order to avoid white rust, care must be taken to keep the coated products dry during transportation and storage. Condensation may form between laps or sheets due to, for example, daily temperature changes or when bringing cold products into a warm building. If they become wet and white rust begins to form, they must be separated and situated so that they are dried quickly. This will prevent any further formation of white rust.

Delivery Conditions

Order

To receive steel products in the agreed schedule and as ordered, the following information shall be specified at the time of enquiry and order:

1. quantity to be delivered (kg / t)

2. type of product (coil, slit strip, cut sheet)

3. dimensional specification (e.g. standard number)

4. nominal dimensions (thickness, width, and if applicable, also length)

5. if applicable, letter S denoting relevant special tolerance in the dimension (e.g. 1250S = width 1250mm with special tolerance)

6. specification of the steel (standard number)

7. steel name or steel number, coating designation (Z, ZA or ZF) and mass of coating (e.g. 275 = 275 g/m2)

8. letter denoting the coating finish (M=minimized spangle, for zinc only)

9. letter denoting the surface quality (A or B)

10. letter denoting the surface treatment (C, O, CO, S or U)

11. the maximum and minimum weight of coil, slitted coil or bundle

12. inside coil diameter (610 or 508mm)

13. requirements for packing and inspection documents (type 2.1, 2.2, 3.1 or 3.2 according to EN 10204)

14. end use application

Delivery

Metal coated steels can be delivered in the following forms:

- coils (width up to 1500mm, see more detailed in Dimension Program). Coil weight from 3.5 to 24t.

- slit strips (width down to 50 mm) upon request

- cut sheets (length from 750 to 6000 mm) upon request

Via steel service centers we can also provide other slit strip widths and cut sheet lengths, as well as several processing options.
General delivery information can be found from the following documents:
SSABs General Conditions of Sales

Contact Information

www.ssab.com/contact