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Flat product Black or Pickled and Oiled

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#### **COLD ROLLED**

Flat product in cold Rolled material with batch annealing.



#### **GALVANIZED**

Flat product Galvanized by continuously immersion in a zinc bath.

#### HOT ROLLED

Flat product Black or Pickled and Oiled.



#### Dimension tolerances

Normal dimensional tolerance ranges are guaranteed in accordance with EN 10151.

# Chemical composition

The chemical composition conforms to the product grade reference standards and if specified by the customer, it may be guaranteed for suitability for galvanising (category A, B, or D) or welding.

#### **Supply** conditions

If specified by the customer, the skin-pass operation may be performed for products up to 3 mm thick.



#### Surface protection

To ensure surface protection against oxidation at pickled and oiled, a layer of protective oil is applied. In cases of supply without oil, there is no guarantee against oxidation.

# Product weights

Maximum weight: 26 t

Internal diameter pickled and oiled: 610 mm Internal diameter black: 760 or 610 mm Maximum external diameter: 2.000 mm



# Mechanical characteristics and dimensions for coil supply

|   | ReL<br>(MPa)                                   | Rm<br>(MPa)                             | A80 min (%)    |               |             |              | Thickness<br>(mm)      | Width (mm) |            |
|---|--|---|----------------|---------------|-------------|--------------|------------------------|------------|------------|
| Grade                                   |  |   | Thickness (mm) |               |             |              |                        |            |            |
|   |  |   | ≤1,5           | >1,5<br>≤2    | > 2<br>≤2,5 | > 2,5<br>< 3 | ≥3<br>(L0=5,65<br>√S0) | (11111)    |            |
|   | Low carbon forming steel (EN 10111)            |   |                |               |             |              |                        |            |            |
| DD11                                    | t < 2 mm<br>170 - 360<br>t ≥ 2 mm<br>170 - 340 | 440 máx.                                | 22             | 23            | 2           | 4            | 28                     | 1,4 - 6,0  | 800 - 1550 |
|   |  |   | S              | tructural ste | el (EN 1002 | 25-2)        |                        |            |            |
| S235JR                                  | 235 min  | 360 - 510                               | 18             | 19            | 20          | 21           | 26                     | 1,4 - 6,0  |            |
| S275JR                                  | 275 min  | t <3<br>430 - 580<br>t ≥ 3<br>410 - 560 | 16             | 17            | 18          | 19           | 23                     |            | 800 - 1550 |
| S355JR                                  | 355 min  | t <3<br>510 - 680<br>t≥3<br>470 - 630   | 15             | 16            | 17          | 18           | 22                     | 2,0 - 6,0  |            |
| High yield strength steels (EN 10149-2) |  |   |                |               |             |              |                        |            |            |
| S315 MC                                 | 315 min  | 390 – 510                               | 20 24          |               |             | 20 (0        | 000 4550               |            |            |
| S355 MC                                 | 355 min  | 430 - 550                               |                |               | 2,0 - 6,0   | 800 – 1550   |                        |            |            |

#### COLD ROLLED

Flat product in cold Rolled material with batch annealing.



### Mechanical characteristics and dimensions for coil supply

Mechanical characteristics in accordance with EN10130

| Grade                               | Re máx.<br>(MPa) | Rm (MPa)  | A80 min<br>(%) | r90 min | n90 min | Thickness (mm) | Width (mm) |
|-------------------------------------|------------------|-----------|----------------|---------|---------|----------------|------------|
| Low carbon forming steel (EN 10130) |                  |           |                |         |         |                |            |
| DC01                                | 280              | 270 - 410 | 28             | -       | -       |                |            |
| DC03                                | 240              | 270 - 370 | 34             | 1,3     | -       | 0,40 - 3,00    | 800 – 1550 |
| DC04                                | 210              | 270 - 350 | 38             | 1,6     | 0,180   |                |            |

#### Dimension tolerances

Normal dimensional tolerance ranges are guaranteed in accordance with EN 10131.

# Surface appearance

Surface quality type "A" in accordance with standard EN 10130.





#### Surface finishes

It conforms to standard EN 10130 in relation to the following surface finish conditions.

| Surface     | finishes | Roughness (max.: 0,80 mm) |  |  |
|-------------|----------|---------------------------|--|--|
| Normal m    |          | 0,6 µm < Ra ≤ 1,9 µm      |  |  |
| Semi-bright | g        | Ra ≤ 0,9 μm               |  |  |

### Surface protection

To ensure surface protection against oxidation, a layer of protective oil is applied. In cases of supply without oil, there is no guarantee against oxidation.

# Product weights

Maximum weight; 26 t Internal diameter: 610 mm

Maximum external diameter: 2.000 mm

#### **GALVANIZED**

Flat product galvanized by continuously immersion in a zinc bath.



### Mechanical characteristics and dimensions for coil supply

Mechanical characteristics in accordance with EN10346.

| Grade                    | Re max. (MPa)       | Rm (MPa)  | A80 min (%) | Thickness (mm)             | Width (mm)               |  |  |
|--------------------------|---------------------|-----------|-------------|----------------------------|--------------------------|--|--|
| Low carbon forming steel |                     |           |             |                            |                          |  |  |
| DX51D                    | -                   | 270 - 500 | 22          | 0,40 - 2,00                | 800 – 1550               |  |  |
| DX52D                    | 140 - 300           | 270 - 420 | 26          | 2,01 - 2,50                | 800 – 1300               |  |  |
| DX53D                    | 140 - 260 270 - 380 |           | 30          | 2,51 – 3,00                | 800 - 1000               |  |  |
| Structural steel         |                     |           |             |                            |                          |  |  |
| S220GD                   | 220 min             | 300 min   | 20          | 0,40 - 2,00                | 800 - 1550               |  |  |
| S250GD                   | 250 min             | 330 min   | 19          | 2,01 – 2,50                | 800 – 1300               |  |  |
| S280GD                   | 280 min             | 360 min   | 18          | 2,51 – 3,00                | 800 - 1000               |  |  |
| S320GD                   | 320 min             | 390 min   | 17          | 0,40 - 0,60                | 800 - 1300               |  |  |
| S350GD                   | 350 min             | 420 min   | 16          | 0,61 - 2,00<br>2,01 - 3,00 | 800 - 1300<br>800 - 1000 |  |  |

#### Dimension tolerances

Normal dimensional tolerance ranges are guaranteed in accordance with EN 10143.



#### Surface finishes

It conforms to standard EN 10346 in relation to the following surface finish conditions:

| Designati         | on EN 10346             | Characteristics   |  |  |
|-------------------|-------------------------|---|--|--|
| Types of finishes | Minimum star rating (M) | Star rating resulting from adequate control of the solidification |  |  |
| T ( (             | Ordinary finish (A)     | Surface obtained directly after the immersion process             |  |  |
| Types of surfaces | Improved finish (B)     | Surface obtained by skin-pass                                     |  |  |

#### Types of coating

|                             | Total minimum coating on both sides (g/m2) |                       |  |  |  |
|-----------------------------|--|-----------------------|--|--|--|
| Type of coating             | Triple sample testing                      | Single sample testing |  |  |  |
| In accordance with EN 10346 |  |                       |  |  |  |
| Z100                        | 100  | 85                    |  |  |  |
| Z140                        | 140  | 120                   |  |  |  |
| Z200                        | 200  | 170                   |  |  |  |
| Z225                        | 225  | 195                   |  |  |  |
| Z275                        | 275  | 235                   |  |  |  |
| Z350 (*)                    | 350  | 300                   |  |  |  |
| Other possible coatings     |  |                       |  |  |  |
| Z120                        | 120  | 102                   |  |  |  |
| Z150                        | 150  | 128                   |  |  |  |
| Z180                        | 180  | 153                   |  |  |  |
| Z250                        | 250  | 213                   |  |  |  |

<sup>(\*)</sup> Available only for W  $\leq$  1250 mm and t  $\leq$  1 mm

#### **GALVANIZED**

Flat product galvanized by continuously immersion in a zinc bath.



## Surface protection

Trivalent chrome chemical treatment surface protection is applied (colourless appearance). Oil may also be applied.

| Surface roughness protection (max.: 0.80 mm) |    |  |  |  |
|--|----|--|--|--|
| Chemical passivation (trivalent chromium)    | С  |  |  |  |
| Oiled  | 0  |  |  |  |
| Chemical passivation and oiled               | СО |  |  |  |

# Product weights

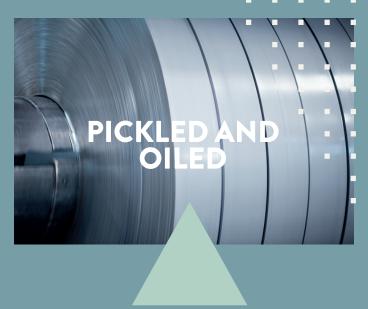
Maximum weight; 25 t Internal diameter: 610 mm

Maximum external diameter: 2.000 mm











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