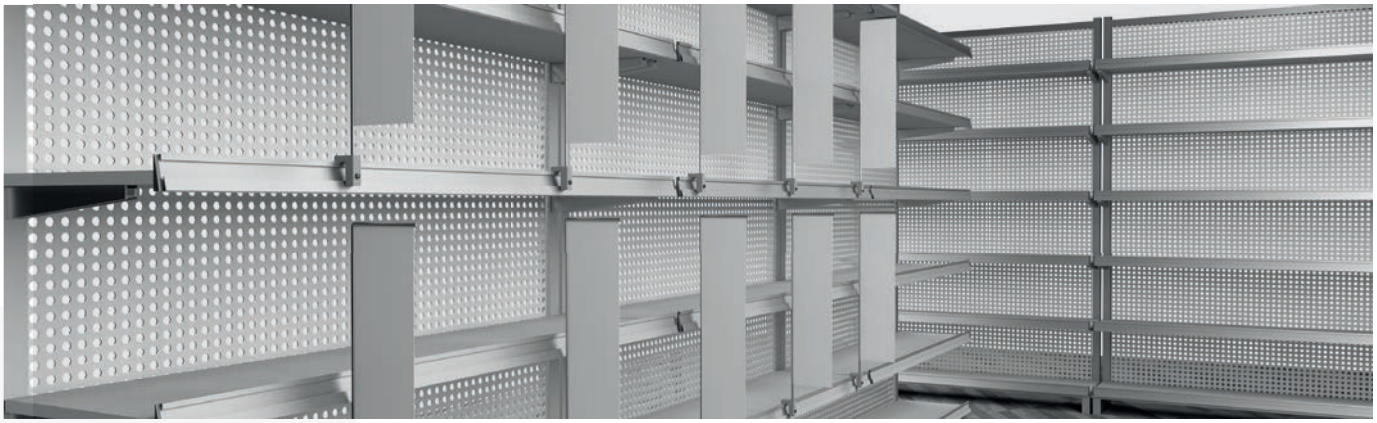

# COLD ROLLED SHEET

Cold rolling is based on hot-rolled pickled strips. Strips pass through a number of roller pairs, and their thickness is reduced while the material is cold. The sheet then has to be annealed and skin-passed in order to achieve its desired properties. Cold-rolled sheet is manufactured in thicknesses of approx. 0.30 to 3.50 mm.

## STEEL GRADES

**Mild steel:** Used when forming and drawing properties are more important than important than tensile ones. Available in grades ranging from DC01 to DC06.

**High-strength steel:** Offers great opportunities for weight savings.

**Micro-alloyed:** Combines high strength and good plasticity. Its uniform tensile properties make it suitable for bending and flanging as well as simpler forms of drawing.

**Dual phase steel:** Designated as DP (Dual Phase) and characterised by very good plasticity in combination with high strength. The steel has good work and bake hardenability, which means that its yield strength is given a major boost in connection with bending and drawing.

**Rephos steel:** This is a phosphorus alloy (P) high-strength steel grade with very good deep drawing properties. The ultimate strength of the ready detail is obtained by means of work hardening during drawing.

| MECHANICAL PROPERTIES — SOFT STEELS | | | | | |
|---|---|---|---|---|---|
| **EN 10 130** | **Yield strength $R_e$ (N/mm²)** | **Tensile strength $R_m$ (N/mm²)** | **Elongation $A_{80}$ min. (%)** | **$r_{90}$ min.** | **$n_{90}$ min.** |
| **DC 01** | 140-280 | 270-410 | 28 | – | – |
| **DC 03** | 140-240 | 270-370 | 34 | 1,3 | – |
| **DC 04** | 140-210 | 270-350 | 38 | 1,6 | 0,18 |
| **DC 05** | 140-180 | 270-330 | 40 | 1,9 | 0,20 |
| **DC 06** | 120-170 | 270-330 | 41 | _ r ≥ 1,8 | _ n ≥ 0,22 |
| Values are based on samples taken transversely to the direction of rolling. | | | | | |

| MECHANICAL PROPERTIES — HIGH-STRENGTH MICRO-ALLOYED STEELS | | | | |
|---|---|---|---|---|
| **EN 10 268** | **Yield strength $R_e$ min.-max. (N/mm²)** | **Tensile strength $R_m$ min.-max. (N/mm²)** | **Elongation $A_{80}$ min. (%)** | **Bending diameter at bending 180°** |
| **HC 260 LA** | 260-330 | 350-430 | 26 | 0 x t |
| **HC 300 LA** | 300-380 | 380-480 | 23 | 0 x t |
| **HC 340 LA** | 340-420 | 410-510 | 21 | 0 x t |
| **HC 380 LA** | 380-480 | 440-560 | 19 | 0,5 x t |
| **HC 420 LA** | 420-520 | 470-590 | 17 | 0,5 x t |
| Values are based on samples taken transversely to the direction of rolling. | | | | |

# SURFACE

For cold-rolled sheet metal, there are two grades of surface quality and one classification of surface roughness.

## SURFACE ACCORDING TO EN 10 130

| | |
|---|---|
| **Surface quality A** | Small defects such as pores, minor scratches and light discolouration are permissible. Surface quality A is the most common one and is suitable for most purposes. |
| **Surface quality B** | One of the sides must be free from defects that can affect the appearance of a quality-varnished surface. The other side must, as a minimum, fulfil the requirements for surface quality A. |

## SURFACE APPEARANCE ACCORDING TO EN 10 130

| Finish | Symbol | Surface roughness |
|---|---|---|
| Glossy | b | $R_a \leq 0{,}4$ µm |
| Semi-gloss | g | $R_a \leq 0{,}9$ µm |
| Standard | m | 0,6 µm < Ra ≤ 1,9 µm |
| Raw | r | $R_a > 1{,}6$ µm |

We offer by default standard surface quality A, surface appearance m and lightly oiled surface.

# THICKNESS TOLERANCES, ACCORDING TO EN 10 131:

For steel grades with a specified min. yield strength <260.

| Nominal thickness (mm) | Thickness tolerances for nominal width (mm) | | |
|---|---|---|---|
| | ≤ 1200 | > 1200 ≤ 1500 | > 1500 |
| ≥ 0,35 till ≤ 0,40 | ± 0,03 | ± 0,04 | – |
| > 0,40 till ≤ 0,60 | ± 0,03 | ± 0,04 | ± 0,05 |
| > 0,60 till ≤ 0,80 | ± 0,04 | ± 0,05 | ± 0,06 |
| > 0,80 till ≤ 1,00 | ± 0,05 | ± 0,06 | ± 0,07 |
| > 1,00 till ≤ 1,20 | ± 0,06 | ± 0,07 | ± 0,08 |
| > 1,20 till ≤ 1,60 | ± 0,08 | ± 0,09 | ± 0,10 |
| > 1,60 till ≤ 2,00 | ± 0,10 | ± 0,11 | ± 0,12 |
| > 2,00 till ≤ 2,50 | ± 0,12 | ± 0,13 | ± 0,14 |
| > 2,50 till ≤ 3,00 | ± 0,15 | ± 0,15 | ± 0,16 |
| For yield strength ≥ 260 < 340 N/mm², tolerances are raised by approx. 20%.<br>For yield strength ≥ 340 ≤ 420 N/mm², tolerances are raised by approx. 40%.<br>Narrower tolerances are available at extra charge. | | | |

# WIDTH TOLERANCES, ACCORDING TO EN 10 131:

| Nominal thickness (mm) | Width tolerance (roller edges) (mm) |
|---|---|
| ≤ 750 ≤ 1200 | – 0 / +4 |
| > 1200 ≤ 1500 | – 0 / +5 |
| > 1500 ≤ 2055 | – 0 / +6 |