

# Range of products

## Cold-rolled thin-gauge sheet

### Low-carbon steels

Cold rolled low carbon steel flat products for cold forming DIN EN 10130

| Designation to |                                | Mechanical properties           |                         |                 |        |        | Chemical composition |               |               |                |               |
|----------------|--------------------------------|---------------------------------|-------------------------|-----------------|--------|--------|----------------------|---------------|---------------|----------------|---------------|
| EN 10130       | EN 10027-2<br>Material<br>code | Re (N/mm <sup>2</sup> )<br>max. | Rm (N/mm <sup>2</sup> ) | A80 (%)<br>min. | r min. | n min. | C (%)<br>max.        | P (%)<br>max. | S (%)<br>max. | Mn (%)<br>max. | Ti (%)<br>max |
| DC01           | 1.0330                         | 280                             | 270 to 410              | 28              | -      | -      | 0,12                 | 0,045         | 0,045         | 0,60           | -             |
| DC03           | 1.0347                         | 240                             | 270 to 370              | 34              | 1,3    | -      | 0,10                 | 0,035         | 0,035         | 0,45           | -             |
| DC04           | 1.0338                         | 210                             | 270 to 350              | 38              | 1,6    | 0,180  | 0,08                 | 0,030         | 0,030         | 0,40           | -             |
| DC05           | 1.0312                         | 180                             | 270 to 330              | 40              | 1,9    | 0,200  | 0,06                 | 0,025         | 0,025         | 0,35           | -             |
| DC06           | 1.0873                         | 170                             | 270 to 330              | 41              | 2,1    | 0,220  | 0,02                 | 0,020         | 0,020         | 0,25           | 0,3           |
| DC07           | 1.0898                         | 150                             | 250 to 310              | 44              | 2,5    | 0,230  | 0,01                 | 0,020         | 0,020         | 0,20           | 0,2           |

### Low-carbon steels

Mechanical properties and chemical compositions of cold-rolled fine-grained steels, extract from VDA 239-100

| Designation to |             | Mechanical properties |         |             |            |           | Chemical composition |        |        |       |       |        |       |       |
|----------------|-------------|-----------------------|---------|-------------|------------|-----------|----------------------|--------|--------|-------|-------|--------|-------|-------|
| VDA239-100     | Rp0,2 (Mpa) | Rm0,2 (Mpa)           | A% min. | r90/20 min. | rm/20 min. | n10/20/kg | C (%)                | Si (%) | Mn (%) | P (%) | S (%) | Al (%) | Ti+Nb | Cr+Mo |
| CR1            | 140 to 300  | 270 to 410            | 28      | -           | -          | -         | 0,12                 | 0,50   | 0,60   | 0,065 | 0,045 | 0,010  | -     | -     |
| CR2            | 140 to 240  | 270 to 370            | 34      | 1,3         | 1,200      | 0,16      | 0,10                 | 0,50   | 0,50   | 0,065 | 0,045 | 0,010  | -     | -     |
| CR3            | 140 to 210  | 270 to 350            | 38      | 1,8         | 1,500      | 0,18      | 0,08                 | 0,50   | 0,50   | 0,030 | 0,030 | 0,010  | 0,30  | -     |
| CR4            | 140 to 180  | 270 to 330            | 39      | 1,9         | 1,600      | 0,20      | 0,06                 | 0,50   | 0,40   | 0,025 | 0,025 | 0,010  | 0,30  | -     |
| CR5            | 110 to 170  | 260 to 330            | 41      | 2,1         | 1,800      | 0,22      | 0,02                 | 0,50   | 0,30   | 0,020 | 0,020 | 0,010  | 0,30  | -     |

### Structural steels

Steels for general structural purposes DIN 1623

| Designation to |                      |                             | Mechanical properties           |                         |                 |               | Chemical composition |                |               |               |  |
|----------------|----------------------|-----------------------------|---------------------------------|-------------------------|-----------------|---------------|----------------------|----------------|---------------|---------------|--|
| DIN 1623       | DIN 1623 T2<br>(old) | EN 10027-2<br>Material code | Re (N/mm <sup>2</sup> )<br>min. | Rm (N/mm <sup>2</sup> ) | A80 (%)<br>min. | C (%)<br>max. | Si (%)<br>max.       | Mn (%)<br>max. | P (%)<br>max. | S (%)<br>max. |  |
| S 215 G        | St 37-3 G            | 1.0116 G                    | 215                             | 360 to 510              | 20              | 0,17          | -                    | 1,50           | 0,030         | 0,025         |  |
| S 245 G        | St 44-3 G            | 1.0144 G                    | 245                             | 430 to 580              | 18              | 0,20          | -                    | 1,60           | 0,030         | 0,025         |  |
| S 325 G        | St52-3 G             | 1.0570 G                    | 325                             | 510 to 680              | 16              | 0,20          | 0,55                 | 1,60           | 0,030         | 0,025         |  |

### Grades for enamelling

Cold-rolled flat products made of mild steel for enamelling DIN EN 10209

| Designation to |            | Mechanical properties           |                         |                 |        | Chemical composition |                |
|----------------|------------|---------------------------------|-------------------------|-----------------|--------|----------------------|----------------|
| EN 10209       | EN 10027-2 | Re (N/mm <sup>2</sup> )<br>max. | Rm (N/mm <sup>2</sup> ) | A80 (%)<br>min. | r min. | C (%)<br>max.        | Ti (%)<br>max. |
| DC01EK         | 1.0390     | 270                             | 270 to 390              | 30              | -      | 0,08                 | -              |
| DC04EK         | 1.0392     | 220                             | 270 to 350              | 36              | -      | 0,08                 | -              |
| DC06EK         | 1.0869     | 190                             | 270 to 350              | 38              | 1,6    | 0,02                 | 0,3            |
| DC03ED         | 1.0399     | 240                             | 270 to 370              | 34              | -      | -                    | -              |
| DC04ED         | 1.0394     | 210                             | 270 to 350              | 38              | -      | -                    | -              |
| DC06ED         | 1.0872     | 190                             | 270 to 350              | 38              | 1,6    | 0,02                 | 0,3            |

# Range of products

## Cold-rolled thin-gauge sheet

### Microalloyed steels

Cold-rolled steel flat products with high yield strength for cold forming from micro-alloyed steel DIN EN 10268

| Designation to |                          | Mechanical properties   |                          |                         |              |        |        |        | Chemical composition |             |             |            |            |             |             |             |
|----------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------|--------|--------|--------|----------------------|-------------|-------------|------------|------------|-------------|-------------|-------------|
| EN 10268       | EN 10027-2 Material code | Re (N/mm <sup>2</sup> ) | BH2 (N/mm <sup>2</sup> ) | Rm (N/mm <sup>2</sup> ) | A80 (%) min. | r max. | r min. | n min. | C (%) max.           | Si (%) max. | Mn (%) max. | P (%) max. | S (%) max. | Al (%) max. | Ti (%) max. | Nb (%) max. |
| HC180Y         | 1.0922                   | 180 to 230              | -                        | 340 to 400              | 36           | -      | 1,7    | 0,19   | 0,01                 | 0,30        | 0,70        | 0,060      | 0,025      | 0,01        | 0,12        | -           |
| HC180P         | 1.0342                   | 180 to 230              | -                        | 280 to 360              | 34           | -      | 1,6    | 0,17   | 0,05                 | 0,40        | 0,60        | 0,080      | 0,025      | 0,015       | -           | -           |
| HC180B         | 1.0395                   | 180 to 230              | 35                       | 300 to 360              | 34           | -      | 1,6    | 0,17   | 0,05                 | 0,50        | 0,70        | 0,060      | 0,025      | 0,015       | -           | -           |
| HC220Y         | 1.0925                   | 220 to 270              | -                        | 350 to 420              | 34           | -      | 1,6    | 0,18   | 0,01                 | 0,30        | 0,90        | 0,080      | 0,025      | 0,01        | 0,12        | -           |
| HC220I         | 1.0346                   | 220 to 270              | -                        | 300 to 380              | 34           | 1,4    | -      | 0,18   | 0,07                 | 0,50        | 0,50        | 0,050      | 0,025      | 0,015       | 0,05        | -           |
| HC220P         | 1.0397                   | 220 to 270              | -                        | 320 to 400              | 32           | -      | 1,3    | 0,16   | 0,07                 | 0,50        | 0,70        | 0,080      | 0,025      | 0,015       | -           | -           |
| HC220B         | 1.0396                   | 220 to 270              | 35                       | 320 to 400              | 32           | -      | 1,5    | 0,16   | 0,06                 | 0,50        | 0,70        | 0,080      | 0,025      | 0,015       | -           | -           |
| HC260Y         | 1.0928                   | 260 to 320              | -                        | 380 to 440              | 32           | -      | 1,4    | 0,17   | 0,01                 | 0,30        | 1,60        | 0,100      | 0,025      | 0,01        | 0,12        | -           |
| HC260I         | 1.0349                   | 260 to 310              | -                        | 320 to 400              | 32           | 1,4    | -      | 0,17   | 0,07                 | 0,50        | 0,50        | 0,050      | 0,025      | 0,015       | 0,05        | -           |
| HC260P         | 1.0417                   | 260 to 320              | -                        | 360 to 440              | 29           | -      | -      | -      | 0,08                 | 0,50        | 0,70        | 0,100      | 0,025      | 0,015       | -           | -           |
| HC260B         | 1.0400                   | 260 to 320              | 35                       | 360 to 440              | 29           | -      | -      | -      | 0,08                 | 0,50        | 0,70        | 0,100      | 0,025      | 0,015       | -           | -           |
| HC260LA        | 1.0480                   | 260 to 330              | -                        | 350 to 430              | 26           | -      | -      | -      | 0,10                 | 0,50        | 0,60        | 0,025      | 0,025      | 0,015       | 0,15        | -           |
| HC300I         | 1.0447                   | 300 to 350              | -                        | 340 to 440              | 30           | 1,4    | -      | 0,16   | 0,08                 | 0,50        | 0,70        | 0,080      | 0,025      | 0,015       | 0,05        | -           |
| HC300P         | 1.0448                   | 300 to 360              | -                        | 400 to 480              | 26           | -      | -      | -      | 0,10                 | 0,50        | 0,70        | 0,120      | 0,025      | 0,015       | -           | -           |
| HC300B         | 1.0444                   | 300 to 360              | 35                       | 400 to 480              | 26           | -      | -      | -      | 0,10                 | 0,50        | 0,70        | 0,120      | 0,025      | 0,015       | -           | -           |
| HC300LA        | 1.0489                   | 300 to 380              | -                        | 380 to 480              | 23           | -      | -      | -      | 0,10                 | 0,50        | 1,00        | 0,025      | 0,025      | 0,015       | 0,15        | 0,09        |
| HC340LA        | 1.0548                   | 340 to 420              | -                        | 410 to 510              | 21           | -      | -      | -      | 0,10                 | 0,50        | 1,10        | 0,025      | 0,025      | 0,015       | 0,15        | 0,09        |
| HC380LA        | 1.0550                   | 380 to 480              | -                        | 440 to 560              | 19           | -      | -      | -      | 0,10                 | 0,50        | 1,60        | 0,025      | 0,025      | 0,015       | 0,15        | 0,09        |
| HC420LA        | 1.0556                   | 420 to 520              | -                        | 470 to 590              | 17           | -      | -      | -      | 0,10                 | 0,50        | 1,60        | 0,025      | 0,025      | 0,015       | 0,15        | 0,09        |

B bake-hardening P phosphorus-alloyed Y interstitial free (IF steel) LA low alloyed (microalloy) I isotropic

### Microalloyed steels

Mechanical properties and chemical compositions of cold-rolled fine-grained steels, extract from VDA 239-100

| Designation to |              | Mechanical properties |         |            |            |                | Chemical composition |             |             |            |            |             |             |             |
|----------------|--------------|-----------------------|---------|------------|------------|----------------|----------------------|-------------|-------------|------------|------------|-------------|-------------|-------------|
| VDA239-100     | Rp0,2z (Mpa) | Rm0,2 (Mpa)           | A% min. | r0/20 min. | rm/20 min. | n10/20/kg min. | C (%) max.           | Si (%) max. | Mn (%) max. | P (%) max. | S (%) max. | Al (%) max. | Ti+(%) max. | Nb (%) max. |
| CR210LA        | 210 to 300   | 310 to 410            | 29      | 1          | 1,100      | 0,15           | 0,10                 | 0,50        | 1,00        | 0,080      | 0,03       | 0,015       | -           | -           |
| CR240LA        | 240 to 320   | 320 to 420            | 27      | -          | -          | 0,15           | 0,10                 | 0,50        | 1,00        | 0,030      | 0,025      | 0,015       | 0,15        | -           |
| CR270LA        | 270 to 350   | 350 to 450            | 25      | -          | -          | 0,14           | 0,12                 | 0,50        | 1,00        | 0,030      | 0,025      | 0,015       | 0,15        | 0,09        |
| CR300LA        | 300 to 380   | 370 to 470            | 23      | -          | -          | 0,14           | 0,12                 | 0,50        | 1,40        | 0,030      | 0,025      | 0,015       | 0,15        | 0,09        |
| CR340LA        | 340 to 430   | 410 to 520            | 21      | -          | -          | 0,12           | 0,12                 | 0,50        | 1,50        | 0,030      | 0,025      | 0,015       | 0,15        | 0,09        |
| CR380LA        | 380 to 470   | 450 to 560            | 19      | -          | -          | 0,12           | 0,12                 | 0,50        | 1,60        | 0,030      | 0,025      | 0,015       | 0,15        | 0,09        |
| CR420LA        | 420 to 520   | 480 to 590            | 17      | -          | -          | 0,11           | 0,12                 | 0,50        | 1,65        | 0,030      | 0,025      | 0,015       | 0,15        | 0,09        |
| CR160IF        | 160 to 210   | 280 to 340            | 38      | 1,4        | 1,500      | 0,2            | 0,01                 | 0,50        | 0,60        | 0,060      | 0,025      | 0,010       | 0,12        | 0,09        |
| CR180IF        | 180 to 240   | 330 to 400            | 35      | 1,2        | 1,300      | 0,19           | 0,01                 | 0,50        | 0,70        | 0,060      | 0,025      | 0,010       | 0,12        | 0,09        |
| CR210IF        | 210 to 270   | 340 to 410            | 33      | 1,1        | 1,300      | 0,18           | 0,01                 | 0,50        | 0,90        | 0,080      | 0,025      | 0,010       | 0,12        | 0,09        |
| CR240IF        | 240 to 300   | 360 to 430            | 31      | 1,0        | 1,200      | 0,17           | 0,01                 | 0,50        | 1,60        | 0,100      | 0,025      | 0,010       | 0,12        | 0,09        |
| CR180BH        | 180 to 240   | 290 to 360            | 34      | 1,1        | 1,300      | 0,17           | 0,06                 | 0,50        | 0,70        | 0,060      | 0,025      | 0,015       | -           | -           |
| CR210BH        | 210 to 270   | 320 to 400            | 32      | 1,1        | 1,200      | 0,16           | 0,08                 | 0,50        | 0,70        | 0,085      | 0,025      | 0,015       | -           | -           |
| CR240BH        | 240 to 300   | 340 to 300            | 29      | 1,0        | 1,100      | 0,15           | 0,10                 | 0,50        | 1,00        | 0,100      | 0,03       | 0,015       | -           | -           |

# Range of products

## Cold-rolled thin-gauge sheet

### Microalloyed steels

Cold-rolled steel flat products with high yield strength for cold forming from micro-alloyed steel, extract from VDA 239-100.

| Designation to<br>pr EN 10338           | Mechanical properties |             |          |            |           | Chemical composition |       |        |        |       |       |           |                |                |
|---|-----------------------|-------------|----------|------------|-----------|----------------------|-------|--------|--------|-------|-------|-----------|----------------|----------------|
|   | Rp0,2 (Mpa)           | Rm (Mpa)    | A80 min. | r0/20 min. | r4-6 min. | n10-20/kg min.       | C (%) | Si (%) | Mn (%) | P (%) | S (%) | Al (%)    | Ti+Nb (%) max. | Cr+Mo (%) max. |
| <b>Dual-phase steel</b>                 |                       |             |          |            |           |                      |       |        |        |       |       |           |                |                |
| CR290Y490T-DP                           | 290 to 380            | 490 to 600  | 24       |            | 0,19      | 0,15                 | 0,14  | 0,5    | 1,8    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,00           |
| CR330Y590T-DP                           | 330 to 430            | 590 to 700  | 20       |            | 0,18      | 0,14                 | 0,15  | 0,75   | 2,5    | 0,04  | 0,015 | 0,015-1,0 | 0,15           | 1,40           |
| CR440Y780T-DP                           | 440 to 550            | 780 to 900  | 14       |            | 0,15      | 0,11                 | 0,18  | 0,8    | 2,5    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,40           |
| CR590Y980T-DP                           | 590 to 740            | 980 to 1130 | 10       |            |           |                      | 0,2   | 1,0    | 2,9    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,40           |
| CR700Y980T-DP                           | 700 to 850            | 980 to 1130 | 8        |            |           |                      | 0,23  | 1,0    | 2,9    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,40           |
| <b>TRIP steels</b>                      |                       |             |          |            |           |                      |       |        |        |       |       |           |                |                |
| CR400Y690T-TR                           | 400 to 520            | 690 to 800  | 24       | 1,4        |           | 0,19                 | 0,24  | 2,0    | 2,2    | 0,08  | 0,015 | 0,015-1,0 | 0,20           | 0,60           |
| CR450Y780T-TR                           | 450 to 570            | 780 to 910  | 21       | 1,2        |           | 0,16                 | 0,25  | 2,2    | 2,5    | 0,08  | 0,015 | 0,015-1,0 | 0,20           | 0,60           |
| <b>Complex phase steels (CP steels)</b> |                       |             |          |            |           |                      |       |        |        |       |       |           |                |                |
| CR570Y780T-CP                           | 570 to 720            | 780 to 920  | 10       | 1,0        |           |                      | 0,18  | 1,0    | 2,5    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,00           |
| CR780Y980T-CP                           | 780 to 950            | 980 to 1140 | 6        | 1,1        |           |                      | 0,23  | 1,0    | 2,7    | 0,08  | 0,015 | 0,015-1,0 | 0,15           | 1,00           |