



# COLD-ROLLED STEEL STRIP

Range of supply  
April 2019

| Steel grade                                      | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-]      | BH <sub>2</sub><br>min.<br>[MPa] | Exposed  |
|--|--------------------------|-----------|--|---|---|------------------------|-----------------------------|----------------------------------|----------|
| <b>Mild steels</b>                               |                          |           |  |   |   |                        |                             |                                  |          |
| <b>EN 10130</b>                                  |                          |           | <b>R<sub>e</sub></b>                         | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>90</sub></b>       | <b>BH<sub>2</sub></b>            | <b>E</b> |
| DC01   | EN 10130                 | Trans.    | 140 - 280                                    | 270 - 410                                   | 28  | -                      | -                           | -                                | ✓        |
| DC03   | EN 10130                 | Trans.    | 140 - 240                                    | 270 - 370                                   | 34  | 1.3                    | -                           | -                                | ✓        |
| DC04   | EN 10130                 | Trans.    | 140 - 210                                    | 270 - 350                                   | 38  | 1.6                    | 0.18                        | -                                | ✓        |
| DC05   | EN 10130                 | Trans.    | 140 - 180                                    | 270 - 330                                   | 40  | 1.9                    | 0.20                        | -                                | ✓        |
| DC06   | EN 10130                 | Trans.    | 120 - 170                                    | 270 - 330                                   | 41  | 2.1                    | 0.22                        | -                                | ✓        |
| DC07   | EN 10130                 | Trans.    | 100 - 150                                    | 250 - 310                                   | 44  | 2.5                    | 0.23                        | -                                | ✓        |
| <b>VDA 239-100 and voestalpine special grade</b> |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| CR1  | VDA 239-100              | Trans.    | 140 - 300                                    | 270 - 410                                   | 28  | -                      | -                           | -                                | ✓        |
| CR2  | VDA 239-100              | Trans.    | 140 - 240                                    | 270 - 370                                   | 34  | 1.3                    | 0.16                        | -                                | ✓        |
| CR3  | VDA 239-100              | Trans.    | 140 - 210                                    | 270 - 350                                   | 38  | 1.8                    | 0.18                        | -                                | ✓        |
| CR4  | VDA 239-100              | Trans.    | 140 - 180                                    | 270 - 330                                   | 39  | 1.9                    | 0.20                        | -                                | ✓        |
| CR5  | VDA 239-100              | Trans.    | 110 - 170                                    | 260 - 330                                   | 41  | 2.1                    | 0.22                        | -                                | ✓        |
| CR6  | voestalpine              | Trans.    | 110 - 170                                    | 250 - 330                                   | 43  | 2.3                    | 0.23                        | -                                | ✓        |
| <b>Structural steels</b>                         |                          |           |  |   |   |                        |                             |                                  |          |
| <b>DIN 1623</b>                                  |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| S215G  | DIN 1623                 | Trans.    | ≥ 215  | 360 - 510                                   | 20  | -                      | -                           | -                                | -        |
| <b>Enameling steels</b>                          |                          |           |  |   |   |                        |                             |                                  |          |
| <b>EN 10209 and voestalpine special grade</b>    |                          |           | <b>R<sub>e</sub></b>                         | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r</b>               | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| DC01EK   | EN 10209                 | Trans.    | 140 - 270                                    | 270 - 390                                   | 30  | -                      | -                           | -                                | -        |
| DC04EK   | EN 10209                 | Trans.    | 140 - 220                                    | 270 - 350                                   | 36  | -                      | -                           | -                                | -        |
| DC05EK   | EN 10209                 | Trans.    | 140 - 220                                    | 270 - 350                                   | 36  | 1.5                    | -                           | -                                | -        |
| DC06EK   | EN 10209                 | Trans.    | 120 - 190                                    | 270 - 350                                   | 38  | 1.6                    | -                           | -                                | -        |
| DC03ED TiVac                                     | voestalpine              | Trans.    | 140 - 220                                    | 270 - 370                                   | 34  | 1.4                    | -                           | -                                | -        |
| DC04ED TiVac                                     | voestalpine              | Trans.    | 140 - 200                                    | 270 - 350                                   | 38  | -                      | -                           | -                                | -        |

| Steel grade                 | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-]      | BH <sub>2</sub><br>min.<br>[MPa] | Exposed  |
|-----------------------------|--------------------------|-----------|--|---|---|------------------------|-----------------------------|----------------------------------|----------|
| <b>Micro-alloyed steels</b> |                          |           |  |   |   |                        |                             |                                  |          |
| <b>EN 10268</b>             |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>90</sub></b>       | <b>BH<sub>2</sub></b>            | <b>E</b> |
| HC260LA                     | EN 10268                 | Trans.    | 260 - 330                                    | 350 - 430                                   | 26  | -                      | -                           | -                                | -        |
| HC300LA                     | EN 10268                 | Trans.    | 300 - 380                                    | 380 - 480                                   | 23  | -                      | -                           | -                                | -        |
| HC340LA                     | EN 10268                 | Trans.    | 340 - 420                                    | 410 - 510                                   | 21  | -                      | -                           | -                                | -        |
| HC380LA                     | EN 10268                 | Trans.    | 380 - 480                                    | 440 - 580                                   | 19  | -                      | -                           | -                                | -        |
| HC420LA                     | EN 10268                 | Trans.    | 420 - 520                                    | 470 - 600                                   | 17  | -                      | -                           | -                                | -        |
| HC460LA                     | EN 10268                 | Trans.    | 460 - 580                                    | 510 - 660                                   | 13  | -                      | -                           | -                                | -        |
| HC500LA                     | EN 10268                 | Trans.    | 500 - 620                                    | 550 - 710                                   | 12  | -                      | -                           | -                                | -        |
| <b>VDA 239-100</b>          |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>0</sub></b>   | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| CR210LA                     | VDA 239-100              | Long.     | 210 - 300                                    | 310 - 410                                   | 29  | 1.0                    | 0.15                        | -                                | -        |
| CR240LA                     | VDA 239-100              | Long.     | 240 - 320                                    | 320 - 430                                   | 27  | -                      | 0.15                        | -                                | -        |
| CR270LA                     | VDA 239-100              | Long.     | 270 - 350                                    | 350 - 460                                   | 25  | -                      | 0.14                        | -                                | -        |
| CR300LA                     | VDA 239-100              | Long.     | 300 - 380                                    | 380 - 490                                   | 23  | -                      | 0.14                        | -                                | -        |
| CR340LA                     | VDA 239-100              | Long.     | 340 - 430                                    | 410 - 530                                   | 21  | -                      | 0.12                        | -                                | -        |
| CR380LA                     | VDA 239-100              | Long.     | 380 - 470                                    | 450 - 570                                   | 19  | -                      | 0.12                        | -                                | -        |
| CR420LA                     | VDA 239-100              | Long.     | 420 - 520                                    | 480 - 600                                   | 17  | -                      | 0.11                        | -                                | -        |
| CR460LA                     | VDA 239-100              | Long.     | 460 - 580                                    | 520 - 680                                   | 15  | -                      | 0.10                        | -                                | -        |

| Steel grade                      | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-]      | BH <sub>2</sub><br>min.<br>[MPa] | Exposed  |
|----------------------------------|--------------------------|-----------|--|---|---|------------------------|-----------------------------|----------------------------------|----------|
| <b>Bake-hardening steels</b>     |                          |           |  |   |   |                        |                             |                                  |          |
| <b>EN 10268</b>                  |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>90</sub></b>       | <b>BH<sub>2</sub></b>            | <b>E</b> |
| HC180B                           | EN 10268                 | Trans.    | 180 - 230                                    | 290 - 360                                   | 34  | 1.6                    | 0.17                        | 35                               | ✓        |
| HC220B                           | EN 10268                 | Trans.    | 220 - 270                                    | 320 - 400                                   | 32  | 1.5                    | 0.16                        | 35                               | ✓        |
| HC260B                           | EN 10268                 | Trans.    | 260 - 320                                    | 360 - 440                                   | 29  | -                      | -                           | 35                               | ✓        |
| HC300B                           | EN 10268                 | Trans.    | 300 - 360                                    | 390 - 480                                   | 26  | -                      | -                           | 35                               | -        |
| <b>VDA 239-100</b>               |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>0</sub></b>   | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| CR180BH                          | VDA 239-100              | Long.     | 180 - 240                                    | 290 - 370                                   | 34  | 1.1                    | 0.17                        | 20/30                            | ✓        |
| CR210BH                          | VDA 239-100              | Long.     | 210 - 270                                    | 320 - 400                                   | 32  | 1.1                    | 0.16                        | 20/30                            | ✓        |
| CR240BH                          | VDA 239-100              | Long.     | 240 - 300                                    | 340 - 440                                   | 29  | 1.0                    | 0.15                        | 20/30                            | ✓        |
| CR270BH                          | VDA 239-100              | Long.     | 270 - 330                                    | 360 - 460                                   | 27  | -                      | 0.13                        | 20/30                            | -        |
| <b>High-strength LC steels</b>   |                          |           |  |   |   |                        |                             |                                  |          |
| <b>Special voestalpine grade</b> |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| HC180LC                          | voestalpine              | Trans.    | 180 - 270                                    | 300 - 390                                   | 32  | -                      | -                           | -                                | ✓        |
| HC200LC                          | voestalpine              | Trans.    | 200 - 290                                    | 310 - 400                                   | 31  | -                      | -                           | -                                | ✓        |
| HC220LC                          | voestalpine              | Trans.    | 220 - 310                                    | 320 - 410                                   | 30  | -                      | -                           | -                                | ✓        |

| Steel grade                      | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-]      | BH <sub>2</sub><br>min.<br>[MPa] | Exposed  |
|----------------------------------|--------------------------|-----------|--|---|---|------------------------|-----------------------------|----------------------------------|----------|
| <b>High-strength IF steels</b>   |                          |           |  |   |   |                        |                             |                                  |          |
| <b>EN 10268</b>                  |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>90</sub></b>       | <b>BH<sub>2</sub></b>            | <b>E</b> |
| HC180Y                           | EN 10268                 | Trans.    | 180 - 230                                    | 330 - 400                                   | 35  | 1.7                    | 0.19                        | -                                | ✓        |
| HC220Y                           | EN 10268                 | Trans.    | 220 - 270                                    | 340 - 420                                   | 33  | 1.6                    | 0.18                        | -                                | ✓        |
| HC260Y                           | EN 10268                 | Trans.    | 260 - 320                                    | 380 - 440                                   | 31  | 1.4                    | 0.17                        | -                                | ✓        |
| <b>VDA 239-100</b>               |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>0</sub></b>   | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| CR180IF                          | VDA 239-100              | Long.     | 180 - 240                                    | 320 - 400                                   | 35  | 1.2                    | 0.19                        | -                                | ✓        |
| CR210IF                          | VDA 239-100              | Long.     | 210 - 270                                    | 340 - 420                                   | 33  | 1.1                    | 0.18                        | -                                | ✓        |
| CR240IF                          | VDA 239-100              | Long.     | 240 - 300                                    | 360 - 440                                   | 31  | 1.0                    | 0.17                        | -                                | ✓        |
| <b>Carbon-manganese steels</b>   |                          |           |  |   |   |                        |                             |                                  |          |
| <b>Special voestalpine grade</b> |                          |           | <b>R<sub>p0.2</sub></b>                      | <b>R<sub>m</sub></b>                        | <b>A<sub>80</sub></b>                       | <b>r<sub>90</sub></b>  | <b>n<sub>10-20/Ag</sub></b> | <b>BH<sub>2</sub></b>            | <b>E</b> |
| HT440CM                          | voestalpine              | Trans.    | 280 - 380                                    | ≥ 440                                       | 25  | -                      | -                           | -                                | -        |

| Steel grade                                      | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-] | BH <sub>2</sub><br>min.<br>[MPa] | Exposed |
|--|--------------------------|-----------|--|---|---|------------------------|------------------------|----------------------------------|---------|
| <b>Dual-phase steels</b>                         |                          |           |  |   |   |                        |                        |                                  |         |
| <b>EN 10338</b>                                  |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-UE</sub>     | BH <sub>2</sub>                  | E       |
| HCT450X  | EN 10338                 | Long.     | 260 - 340                                    | ≥ 450                                       | 27  | -                      | 0.16                   | 30                               | ✓       |
| HCT490X  | EN 10338                 | Long.     | 290 - 380                                    | ≥ 490                                       | 24  | -                      | 0.15                   | 30                               | ✓       |
| HCT590X  | EN 10338                 | Long.     | 330 - 430                                    | ≥ 590                                       | 20  | -                      | 0.14                   | 30                               | ✓       |
| HCT780X  | EN 10338                 | Long.     | 440 - 550                                    | ≥ 780                                       | 14  | -                      | -                      | 30                               | -       |
| HCT980X  | EN 10338                 | Long.     | 590 - 740                                    | ≥ 980                                       | 10  | -                      | -                      | 30                               | -       |
| <b>VDA 239-100 and voestalpine special grade</b> |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-20/Ag</sub>  | BH <sub>2</sub>                  | E       |
| CR260Y450T-DP                                    | voestalpine              | Long.     | 260 - 340                                    | 450 - 560                                   | 27  | -                      | 0.16                   | 30                               | ✓       |
| CR290Y490T-DP                                    | VDA 239-100              | Long.     | 290 - 380                                    | 490 - 600                                   | 24  | -                      | 0.15                   | 30                               | ✓       |
| CR330Y590T-DP                                    | VDA 239-100              | Long.     | 330 - 430                                    | 590 - 700                                   | 20  | -                      | 0.14                   | 30                               | ✓       |
| CR360Y600T-DP                                    | voestalpine              | Long.     | 360 - 460                                    | 600 - 710                                   | 19  | -                      | 0.14                   | 30                               | ✓       |
| CR440Y780T-DP                                    | VDA 239-100              | Long.     | 440 - 550                                    | 780 - 900                                   | 14  | -                      | 0.11                   | 30                               | -       |
| CR500Y780T-DP                                    | voestalpine              | Long.     | 500 - 620                                    | 780 - 900                                   | 13  | -                      | -                      | 30                               | -       |
| CR550Y980T-DP                                    | voestalpine              | Long.     | 550 - 730                                    | 980 - 1130                                  | 10  | -                      | -                      | 30                               | -       |
| CR590Y980T-DP                                    | VDA 239-100              | Long.     | 590 - 740                                    | 980 - 1130                                  | 10  | -                      | -                      | 30                               | -       |
| CR660Y980T-DP                                    | voestalpine              | Trans.    | 660 - 810                                    | 980 - 1130                                  | 10  | -                      | -                      | 30                               | -       |
| CR700Y980T-DP                                    | VDA 239-100              | Long.     | 700 - 850                                    | 980 - 1130                                  | 8   | -                      | -                      | 30                               | -       |

| <b>Dual-phase high-ductility steels (cold rolled dual-phase steels with improved formability)</b> |             |       |                   |                |                 |                 |                       |                 |   |
|---|-------------|-------|-------------------|----------------|-----------------|-----------------|-----------------------|-----------------|---|
| <b>VDA 239-100 and voestalpine special grade</b>  |             |       | R <sub>p0.2</sub> | R <sub>m</sub> | A <sub>80</sub> | r <sub>90</sub> | n <sub>10-20/Ag</sub> | BH <sub>2</sub> | E |
| CR330Y590T-DH   | voestalpine | Long. | 330 - 430         | 590 - 700      | 26              | -               | 0.16                  | 30              | - |
| CR440Y780T-DH   | VDA 239-100 | Long. | 440 - 550         | 780 - 900      | 18              | -               | 0.13                  | 30              | - |
| CR700Y980T-DH   | VDA 239-100 | Long. | 700 - 850         | 980 - 1180     | 13              | -               | -                     | 30              | - |
| CR850Y1180-DH   | voestalpine | Long. | 850 - 1150        | 1180 - 1350    | 13              | -               | -                     | 30              | - |

| Steel grade   | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-] | BH <sub>2</sub><br>min.<br>[MPa] | Exposed |
|---|--------------------------|-----------|--|---|---|------------------------|------------------------|----------------------------------|---------|
| <b>Complex-phase steels</b>   |                          |           |  |   |   |                        |                        |                                  |         |
| <b>EN 10338</b>   |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-UE</sub>     | BH <sub>2</sub>                  | E       |
| HCT780C   | EN 10338                 | Long.     | 570 - 720                                    | ≥ 780                                       | 10  | -                      | -                      | 30                               | -       |
| HCT980C   | EN 10338                 | Long.     | 780 - 950                                    | ≥ 980                                       | 6   | -                      | -                      | 30                               | -       |
| <b>VDA 239-100 and voestalpine special grade</b>  |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-20/Ag</sub>  | BH <sub>2</sub>                  | E       |
| CR570Y780T-CP   | VDA 239-100              | Long.     | 570 - 720                                    | 780 - 920                                   | 10  | -                      | -                      | 30                               | -       |
| CR660Y780T-CP   | voestalpine              | Long.     | 660 - 830                                    | 780 - 980                                   | 10  | -                      | -                      | 30                               | -       |
| CR780Y980T-CP   | VDA 239-100              | Long.     | 780 - 950                                    | 980 - 1140                                  | 6   | -                      | -                      | 30                               | -       |
| CR900Y1180T-CP  | VDA 239-100              | Long.     | 900 - 1100                                   | 1180 - 1350                                 | 5   | -                      | -                      | 30                               | -       |
| <b>Complex-phase steels high-ductility (cold rolled complex-phase steels with improved formability)</b> |                          |           |  |   |   |                        |                        |                                  |         |
| <b>Special voestalpine grade</b>  |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-UE</sub>     | BH <sub>2</sub>                  | E       |
| CR780Y980T-CH   | voestalpine              | Long.     | 780 - 950                                    | 980 - 1140                                  | 10  | -                      | -                      | 30                               | -       |
| CR900Y1180T-CH  | voestalpine              | Long.     | 900 - 1150                                   | 1180 - 1350                                 | 7   | -                      | -                      | 30                               | -       |
| CR1000Y1370T-CH   | voestalpine              | Long.     | 1000 - 1250                                  | 1370 - 1550                                 | 5   | -                      | -                      | 30                               | -       |

| Steel grade                                      | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-] | BH <sub>2</sub><br>min.<br>[MPa] | Exposed |
|--|--------------------------|-----------|--|---|---|------------------------|------------------------|----------------------------------|---------|
| <b>TRIP steels</b>                               |                          |           |  |   |   |                        |                        |                                  |         |
| <b>EN 10338 and voestalpine special grade</b>    |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-UE</sub>     | BH <sub>2</sub>                  | E       |
| HCT600T  | voestalpine              | Long.     | 400 - 520                                    | ≥ 600                                       | 25  | -                      | -                      | 40                               | -       |
| HCT690T  | EN 10338                 | Long.     | 400 - 520                                    | ≥ 690                                       | 23  | -                      | 0.19                   | 40                               | -       |
| HCT780T  | EN 10338                 | Long.     | 450 - 570                                    | ≥ 780                                       | 21  | -                      | 0.16                   | 40                               | -       |
| <b>VDA 239-100 and voestalpine special grade</b> |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-20/Ag</sub>  | BH <sub>2</sub>                  | E       |
| CR400Y600T-TR                                    | voestalpine              | Long.     | 400 - 520                                    | ≥ 600                                       | 25  | -                      | -                      | 40                               | -       |
| CR400Y690T-TR                                    | VDA 239-100              | Long.     | 400 - 520                                    | 690 - 800                                   | 24  | -                      | 0.19                   | 40                               | -       |
| CR450Y780T-TR                                    | VDA 239-100              | Long.     | 450 - 570                                    | 780 - 910                                   | 21  | -                      | 0.16                   | 40                               | -       |

| <b>Case-hardening, heat-treatable and spring steels in +LC condition (soft-annealed and lightly rerolled)</b> |                |       |                   |                |                 |                 |                       |                 |   |
|---|----------------|-------|-------------------|----------------|-----------------|-----------------|-----------------------|-----------------|---|
| <b>EN 10132:2000</b>  |                |       | R <sub>p0.2</sub> | R <sub>m</sub> | A <sub>80</sub> | r <sub>90</sub> | n <sub>10-20/Ag</sub> | BH <sub>2</sub> | E |
| C10E  | EN 10132-2     | Long. | 345               | 430            | 26              | -               | -                     | -               | - |
| C15E  | EN 10132-2     | Long. | 360               | 450            | 25              | -               | -                     | -               | - |
| 16MnCr5   | EN 10132-2     | Long. | 420               | 550            | 21              | -               | -                     | -               | - |
| C22E  | EN 10132-2     | Long. | 400               | 500            | 22              | -               | -                     | -               | - |
| C35E  | EN 10132-2     | Long. | 430               | 540            | 19              | -               | -                     | -               | - |
| C40E  | EN 10132-3     | Long. | 440               | 550            | 18              | -               | -                     | -               | - |
| C45E  | EN 10132-3     | Long. | 455               | 570            | 18              | -               | -                     | -               | - |
| C50E  | EN 10132-3     | Long. | 465               | 580            | 17              | -               | -                     | -               | - |
| C55E, C55S *  | EN 10132-3, -4 | Long. | 480               | 600            | 17              | -               | -                     | -               | - |
| C60E, C60S *  | EN 10132-3, -4 | Long. | 495               | 620            | 17              | -               | -                     | -               | - |

\* Difference between E and S: Si (≤ 0.4 % / 0.15-0.35 %), P (≤ 0.035 % / ≤ 0.025 %), S (≤ 0.035 % / ≤ 0.025 %)

| Steel grade   | Norms and specifications | Test dir. | Yield strength<br>R <sub>p0.2</sub><br>[MPa] | Tensile strength<br>R <sub>m</sub><br>[MPa] | Total elong.<br>A <sub>80</sub> min.<br>[%] | r value<br>min.<br>[-] | n value<br>min.<br>[-] | BH <sub>2</sub><br>min.<br>[MPa] | Exposed |
|---|--------------------------|-----------|--|---|---|------------------------|------------------------|----------------------------------|---------|
| <b>Case-hardening steels in +LC condition (soft-annealed and lightly rerolled)</b>                            |                          |           |  |   |   |                        |                        |                                  |         |
| <b>Special voestalpine grade (analysis based on standard/Stahlschlüssel [Key to Steel] material database)</b> |                          |           | R <sub>p0.2</sub>                            | R <sub>m</sub>                              | A <sub>80</sub>                             | r <sub>90</sub>        | n <sub>10-20/Ag</sub>  | BH <sub>2</sub>                  | E       |
| 22MnB5  | voestalpine              | Long.     | 320 - 480                                    | 460 - 600                                   | 35  | -                      | -                      | -                                | -       |
| 27MnB5  | voestalpine              | Long.     | 300 - 420                                    | 490 - 600                                   | 33  | -                      | -                      | -                                | -       |
| 34MnB5 *  | voestalpine              | Long.     | 350  | 520   | 31  | -                      | -                      | -                                | -       |
| 38MnB5 *  | voestalpine              | Long.     | -  | -   | -   | -                      | -                      | -                                | -       |

\* Typical values

| <b>Case-hardening steels in +CR condition (cold-rolled, as-rolled)</b>  |             |       |                   |                |                 |                 |                       |                 |   |
|---|-------------|-------|-------------------|----------------|-----------------|-----------------|-----------------------|-----------------|---|
| <b>Special voestalpine grade (analysis based on standard/Stahlschlüssel [Key to Steel] material database)</b> |             |       | R <sub>p0.2</sub> | R <sub>m</sub> | A <sub>80</sub> | r <sub>90</sub> | n <sub>10-20/Ag</sub> | BH <sub>2</sub> | E |
| 33Mn6   | voestalpine | Long. | 900 - 1000        | 1050 - 1200    | 3               | -               | -                     | -               | - |
| 38MnSi4   | voestalpine | Long. | 940 - 1080        | 1140 - 1250    | 3               | -               | -                     | -               | - |

| <b>Martensitic steels</b>                        |             |       |                   |                |                 |                 |                    |                 |   |
|--|-------------|-------|-------------------|----------------|-----------------|-----------------|--------------------|-----------------|---|
| <b>VDA 239-100 and voestalpine special grade</b> |             |       | R <sub>p0.2</sub> | R <sub>m</sub> | A <sub>80</sub> | r <sub>90</sub> | n <sub>10-UE</sub> | BH <sub>2</sub> | E |
| CR860Y1100T-MS                                   | voestalpine | Long. | 860 - 1120        | 1100 - 1320    | 3               | -               | -                  | 30              | - |
| CR1030Y1300T-MS                                  | VDA 239-100 | Long. | 1030 - 1330       | 1300 - 1550    | 3               | -               | -                  | 30              | - |

| <b>Hot-forming steels in +LC condition (soft-annealed and lightly rerolled)</b> |            |        |                   |                |                 |                 |                       |                 |   |
|---|------------|--------|-------------------|----------------|-----------------|-----------------|-----------------------|-----------------|---|
| <b>Special voestalpine grade</b>  |            |        | R <sub>p0.2</sub> | R <sub>m</sub> | A <sub>80</sub> | r <sub>90</sub> | n <sub>10-20/Ag</sub> | BH <sub>2</sub> | E |
| phs uncoated 1500   | unhardened | Trans. | 320 - 480         | 460 - 600      | 18              | -               | -                     | -               | - |
| phs uncoated 2000   | unhardened | Trans. | 320 - 480         | 500 - 620      | 18              | -               | -                     | -               | - |

# SURFACES AND SERVICES

| Surfaces according to EN 10130 and VDA 239-100 |                          |                |              |
|--|--------------------------|----------------|--------------|
| Product variant                                | Norms and specifications | Normal surface | Best surface |
| Uncoated cold-rolled strip                     | EN 10130<br>VDA 239-100  | A<br>U         | B<br>E       |

  

| Subsequent surface treatment |                            |                  |  |
|------------------------------|----------------------------|------------------|--|
| Product variant              | (Corrosion protection) oil | Deep-drawing oil | direct-e <sup>®</sup><br>Directly enamelable forming coating |
| Uncoated cold-rolled strip   | ✓                          | ✓                | ✓  |

  

| Selected services     |                                   |                               |  |
|-----------------------|-----------------------------------|-------------------------------|--|
| Special coil labeling | Roughness deviation from standard | Reduced dimensional tolerance | Material testing according to EN 10204 |
|                       |                                   |                               |  |

# DIMENSIONS

| Available dimensions: wide strip (coil) |                 |                            |                      |
|---|-----------------|----------------------------|----------------------|
| Thickness [mm]                          | Width max. [mm] | Outside diameter max. [mm] | Inside diameter [mm] |
| 0.40 - 3.00                             | 1615            | 2000                       | 500 / 600            |

  

| Available dimensions: slit (slit strip) |                  |                       |                      |
|---|------------------|-----------------------|----------------------|
| Thickness [mm]                          | Strip width [mm] | Outside diameter [mm] | Inside diameter [mm] |
| 0.40 - 3.00                             | 10 - 1615        | 700 - 2200            | 500 / 600            |

  

| Available dimensions: cut-to-length (sheet) |                 |             |                         |
|---|-----------------|-------------|-------------------------|
| Thickness [mm]                              | Width max. [mm] | Length [mm] | Package weight max. [t] |
| 0.40 - 3.00                                 | 210 - 1615      | 200 - 6700  | 6                       |

Indicated references are standard values. The available combinations of widths and thicknesses and supply forms vary depending on the steel grade. Certain limitations possible depending on thickness.

This document provides an overview of the cold-rolled steel strip products supplied by the voestalpine Steel Division. Other grades are available upon request. Please find further information and downloads under the following link: [www.voestalpine.com/steel](http://www.voestalpine.com/steel)

The information and product properties contained in this printed material are non-binding and serve the sole purpose of technical orientation. They do not replace individual advisory services provided by our sales and customer service teams. The product information and characteristics set forth herein shall not be considered as guaranteed properties unless explicitly stipulated in a separate contractual agreement. For this reason, voestalpine shall not grant any warranty nor be held liable for properties and/or specifications other than those subject to explicit agreement. This also applies to the suitability and applicability of products for certain applications as well as to the further processing of materials into final products. All application risks and suitability risks shall be borne by the customer. The General Terms of Sale for Goods and Services of the voestalpine Steel Division shall apply to all materials supplied by the voestalpine Steel Division and can be accessed using the following link: [www.voestalpine.com/stahl/en/The-Steel-Division/General-Terms-of-Sale](http://www.voestalpine.com/stahl/en/The-Steel-Division/General-Terms-of-Sale)

Technical changes are reserved. Errors and misprints are excepted. No part of this publication may be reprinted without explicit written permission by voestalpine Stahl GmbH.

04/2019

**voestalpine Steel Division**  
voestalpine-Straße 3  
4020 Linz, Austria  
T. +43/50304/15-8018  
produktmanagement@voestalpine.com  
[www.voestalpine.com/steel](http://www.voestalpine.com/steel)

**voestalpine**  
ONE STEP AHEAD.