

| | |
|-----------------------|-----------------------|
| Quality | 35SPb20 |
| According to standard | EN 10087: 2000 |
| Number | 1.0756 |

Chemical composition

| C% | Si% | Mn% | P% | S% | Pb% | Deviations allowed for analysis product |
|-----------|--------|-----------|---------|-----------|-------------|---|
| | max | | max | | | |
| 0,32-0,39 | 0,40 | 0,70-1,10 | 0,06 | 0,15-0,25 | 0,15-0,35 | |
| ± 0.03 | + 0.03 | ± 0.04 | + 0.008 | ± 0.03 | +0.03 -0.02 | |

Temperature °C

| Hot-forming | Natural state | Soft annealing | Carburizing | Hardening on carburized surface | Stress-relieving |
|-------------|------------------|-----------------------|----------------------------|---------------------------------|--------------------------------|
| 1230-950 | (HB 210 max) | 680 air | | | |
| Normalizing | Direct hardening | Direct hardening | Stress-relieving | Pre-heating welding | Stress-relieving after welding |
| 860 air | 840 water | 860 oil or polymer | 540-680 furnace cooling | | not recommended |

Mechanical properties

| Hot-rolled natural forming condition EN 10087: 2000 | | | | | | Hot-rolled quenched and tempered | | | |
|---|-----|-------------------|-----------------|--|--|--|-----------------------|-----|-----------------|
| Testing at room temperature (longitudinal) | | | | | | Testing at room temperature (longitudinal) | | | |
| size mm | | R | HB | | | R | Rp 0.2 | A% | HB |
| from | to | N/mm ² | for information | | | N/mm ² | N/mm ² min | min | for information |
| 5 | 10 | 550-720 | 159-223 | | | 630-780 | 430 | 15 | 192-232 |
| 10 | 16 | 550-700 | 159-213 | | | 630-780 | 430 | 15 | 192-232 |
| 16 | 40 | 520-680 | 154-201 | | | 600-750 | 380 | 16 | 178-225 |
| 40 | 63 | 520-670 | 154-198 | | | 550-700 | 320 | 17 | 159-213 |
| 63 | 100 | 500-650 | 149-193 | | | 550-700 | 320 | 17 | 159-213 |

| Cold-drawn +C EN 10277-3: 2008 | | | | | | Hot-rolled peeled-reeled +SH | | | |
|--------------------------------|-----|--|-----------------------|-----|-------------|--|-----------------------|-----|---------|
| Values valid also for +C+SL | | | | | | Values valid also for +SH+SL | | | |
| size mm | | Testing at room temperature (longitudinal) | | | | Testing at room temperature (longitudinal) | | | |
| from | to | R ^{a)} | Rp 0.2 ^{a)} | A% | HB | R | Rp 0.2 | A% | HB |
| | | N/mm ² | N/mm ² min | min | for inform. | N/mm ² | N/mm ² min | min | |
| 5 ^{b)} | 10 | 640-880 | 480 | 6 | 198-263 | | | | |
| 10 | 16 | 590-830 | 400 | 7 | 176-249 | | | | |
| 16 | 40 | 560-800 | 360 | 8 | 162-240 | 520-680 | | | 154-201 |
| 40 | 63 | 530-760 | 340 | 9 | 156-226 | 520-670 | | | 154-198 |
| 63 | 100 | 510-680 | 300 | 9 | 154-208 | 500-650 | | | 149-193 |

^{a)} for flats and special sections, yield point can be - 10% and tensile strength can be ± 10%

^{b)} for thickness < 5 mm, mechanical properties should be agreed before order placement

| Cold-drawn + quenching and tempering +C +QT EN 10277-3: 2008 | | | | | | Quenched and tempered + Cold-drawn +QT +C | | | |
|--|-----|--|-----------------------|------------------|------------------|--|-----------------------|-----|-------------|
| size mm | | Testing at room temperature (longitudinal) | | | | Testing at room temperature (longitudinal) | | | |
| from | to | R ^{c)} | Rp 0.2 ^{c)} | A% ^{c)} | HB ^{c)} | R | Rp 0.2 | A% | HB |
| | | N/mm ² | N/mm ² min | min | for inform. | N/mm ² | N/mm ² min | min | for inform. |
| 5 ^{b)} | 10 | | | | | 700-900 | 490 | 9 | 213-271 |
| 10 | 16 | | | | | 700-900 | 490 | 11 | 213-271 |
| 16 | 40 | 600-750 | 380 | 16 | 178-225 | 650-850 | 455 | 12 | 200-253 |
| 40 | 63 | 550-700 | 320 | 17 | 159-213 | 570-770 | 400 | 13 | 169-231 |
| 63 | 100 | 550-700 | 320 | 17 | 159-213 | 550-750 | 385 | 14 | 159-225 |

^{c)} values valid also for +C+QT+SL and +QT+C+SL

^{b)} for thickness < 5 mm, mechanical properties should be agreed before order placement

| EUROPE EN | ITALY UNI | CHINA GB | GERMANY DIN | FRANCE AFNOR | U.K. B.S. | RUSSIA GOST | USA AISI/SAE |
|-----------|-----------|----------|-------------|--------------|-----------|-------------|--------------|
| 35SPb20 | 35SPb20 | | 35SPb20 | 35SPb20 | 35SPb20 | | |