



# Hot rolled square steel bars

## **Business contact**

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## STEEL RANGE

Structural steels EN 10025-2-3-5
Free cutting non-alloyed steels EN 10087
Case hardening steels EN 10084
Steels for quenching and tempering EN 10083-2-3
Hot-rolled steels for quenched and tempered springs EN 10089
Steels for cold heading and cold extrusion EN 10263
Micro-alloyed steels EN 10267
Steels for pressure purposes EN 10273 - ASTM A105 - ASTM A 350

Notes: possibility of supplying steels in accordance with Customer specifications, to be agreed upon at the order stage.

## PRODUCTION RANGE

### STANDARD MANUFACTURING SIZES

Rolled sections in bars: Cross-section  $30 \div 104,6$  mm

Cross-section side (mm): 30 - 31,5 - 32 - 33 - 35 - 36,5 - 37 - 38 - 40 - 41,5 - 42 - 45 - 46,5 - 50 - 51,5 - 52 - 55 - 56,5 - 60 - 61,5 - 62 - 65 - 66,5 - 70 - 71,5 - 72 - 75 - 78 - 80 - 82 - 85 - 87 - 90 - 92 - 95 - 100 - 102 - 102,5 - 103 - 104,6

Note: crop end, if agreed upon at the order,  $\geq 3$  m for  $\leq 10\%$  of the ordered weight. It will be included in the supply if hot-rolled and separately wrapped if cold-rolled.

Note: length for rolled product to be subject to heat treatment to be agreed upon. (Changes depending on the heat treatment).

Note: possibility of supplying sandblasted - sandblasted/oiled rolled sections with length  $3 \div 12,5$  m (including the length+ tolerance)

### BAR LENGTH

Cerveno:  $3 \div 12,5$  m (including length+ tolerance)  
Commercial length with range  $\leq 1$  m  
Standard Fixed Length --  $0/+200$  mm or  $\pm 100$  mm.  
Extra Standard Fixed Length --  $0/+100$  mm or  $\pm 50$  mm. (to be agreed upon)

### DIMENSIONAL TOLERANCES: UNI EN 10059; DIN 1014; NFA 45-001; NFA 45-101

Standard	UNI EN 10059; DIN 1014; NFA 45-001; NFA 45-101
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

Notes: tolerances with different deviations (with the same range) may be accepted, on condition that they have been agreed upon at the order acquisition stage.

### STRAIGHTNESS

Standard	$30 \leq 80$ mm: $4\% L$ $> 80$ mm: $2,5\% L$
Extra Standard	Camber $\leq 1,5\% L$ with straightening



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## FUORI QUADRO

Standard	$30 \leq 50 \text{ mm}: \leq 1.5 \text{ mm}$ $> 50 \leq 75 \text{ mm} \leq 2.25 \text{ mm}$ $> 75 \leq 100 \text{ mm} = 3 \text{ mm}$ $> 100 \leq 104 \text{ mm} \leq 4.5 \text{ mm}$
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

## TORSION

Standard	$30 \leq 50 \text{ mm}: \leq 3^\circ/\text{m}$ with $18^\circ$ max $> 50 \leq 104 \text{ mm}: \leq 3^\circ/\text{m}$ with $15^\circ$ max
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

## EDGE RADIUS

Standard	$30 \leq 50 \text{ mm}: \leq 2.5 \text{ mm}$ $> 50 \leq 100 \text{ mm} \leq 3 \text{ mm}$ $> 100 \leq 104 \text{ mm} \leq 4 \text{ mm}$
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

## END APPEARANCE

Standard	$30 \div 41.5 \text{ mm}$ : Hot shear cut with flat blades. $45 \div 104 \text{ mm}$ : Hot shear cut with shaped blades.
Extra Standard	$30 \div 104 \text{ mm}$ Cold saw cut at 1 or 2 ends. (to be agreed)

## SUPERFICIAL DEFECTS

Standard	- Production statistics 0.008 *Side with 0.3 minimum and 0.6 mm maximum. - Class B EN 10221.
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## NON-DESTRUCTIVE TESTS FOR INTERNAL DEFECTS

Standard	Not guaranteed
Extra Standard	For size $\geq 25 \text{ mm}$ : 100% off-line core test - Manual ultra-sound test with double probe at $90^\circ$ EN 10308 Class 1 - 2 - 3.

Notes: the rolled section for US testing must have a minimum reduction ratio equal to 4:1.

## DECARBONISATION

Standard	Max. 1% of the side, with a minimum equal to 0.30 mm.
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

Notes: if rolled section subjected to heat treatment, minimum guaranteed decarbonisation is equal to 1.3 mm.

## NON-METALLIC INCLUSIONS

Standard	Macro-purity at grade $\leq 2$ as per S.E.P. 1584 standard. Micro-purity at grade $\leq 2.5$ as per ASTM E 45 standard or with K method at the values of the EN 10083/06-1 standard, App E or EN10084/08 App. C. Macro-segregation $\leq \text{C3-R2-S2}$ as per ASTM E 381 standard.
Extra Standard	Through the vacuum degassing (VD) process it is possible to obtain macro-inclusions falling into grade 0 of the S.E.P. 1584 standard.



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## BANDING

Standard	Maximum guaranteed banding as per Grade IV of the UNI 8449 standard.
Extra Standard	Through the vacuum degassing (VD) process, maximum guaranteed banding as per Grade III of the UNI 8449 standard.

## AUSTENITE GRAIN REFINING FOR SPECIAL STEELS

Standard	5 ÷ 8 austenite grain guaranteed, as per ASTM E112 or ISO 643. This grain size range is not guaranteed for general purpose structural steels, with the exception of the J2 types envisaged in the EN 10025-2 table.
Extra Standard	With extra standard process, 6 or finer austenite grain can be guaranteed.

## MECHANICAL CHARACTERISTICS AND HARDENABILITY

Standard	In accordance with the standardisation table mentioned in the order. On request, all steels can be produced with hardenability restricted to 2/3 of the H standard band, i.e. in the HL (lower 2/3) and HH (upper 2/3) types. Reference for Jominy test: EN ISO 642 standard.
Extra Standard	In accordance with Customer specification, to be evaluated at the order acceptance stage.

## MAGNETIC RETENTIVITY

Standard	Not guaranteed
Extra Standard	To be evaluated at the order acceptance stage

## PACKAGING

Standard	<ul style="list-style-type: none"><li>- 4 ÷ 5 tight containment ties + 2 certified metal lifting rings (Italy)</li><li>- 4 ÷ 5 Tight containment ties</li><li>- 1 tag per bundle</li><li>- 3 identification stamps per bundle (if requested by the customer)</li><li>- Colour as requested by the Customer</li></ul>
Extra Standard	<p>Peculiar conditions besides the previous ones, to be evaluated at the order acceptance stage.</p> <ul style="list-style-type: none"><li>- 2 Tight containment ties + 4 straps per bundle</li><li>- 2 tags, 1 at the front and 1 at the rear of the bundle</li><li>- Polyester lifting belts</li><li>- Identification stamps on all bars</li></ul>

## HEAT TREATMENTS

Our products can be supplied with the following heat treatments:

- Softening annealing +A
- +AC Globular annealing globular level guaranteed  $\geq 70\%$
- Stress-free annealing +SR
- Annealing for ferrite-pearlite structure +FP
- Normalising +N
- Shearability annealing +S
- Hardening field annealing +TH

## ANTI-MIX CHECK

Standard	Spark test
Extra Standard	100% anti-mix check with spectrometer (to be agreed)



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## BUNDLE WEIGHT

Standard	2,500 ÷ 3,100 kg
Extra Standard	1,500 ÷ 2,000 kg

## OTHER INFORMATION

Cold sawability	Guaranteed
Cold shearability	Guaranteed with Max. HB = 220
Manufacturing times	40÷60 days
Product certificate	- Compliant with EN 10204 - TÜV – AD W0/TRD100 and 97/23/EC Directive (PED) for rolled sections intended for pressurised systems - Caterpillar Approval (1E1861) - CE certification as per EN 10025-1/06 for rolled sections intended for use in structures
Minimum batch size	5 tons for standard products included in the shape list
Weight tolerance with respect with the ordered amount	± 20% up to 5 tons. ± 10% > 5 ÷ 25 tons. ± 6% > 25 tons.