

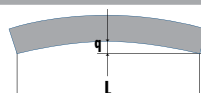
HOT-ROLLED PRODUCTS TOLERANCES

HOT-ROLLED ROUND STEEL BARS DIAMETER TOLERANCES (UNI EN 10060:2004)

Diameter mm	Normal Tolerance mm	Diameter mm	Normal Tolerance mm	Diameter mm	Normal Tolerance mm	Diameter mm	Normal Tolerance mm		
10	± 0,4	30	± 0,6	70	± 1	140	± 2		
12									
13									
14									
15									
16	± 0,5	36	± 0,8	80	± 1,3	155	± 2,5		
18									
19									
20									
22									
24	± 0,6	52	± 1	115	± 1,5	180	± 3		
25									
26									
27									
28									
		60		125	± 2	200	± 4		
		63		130				220	
		65		135				250	

The bar diameter, measured at any point situated at least 100 mm from the end of the bar, shall be in accordance to the tolerances of the schedule. Cold shearing may deform the bars ends. The condition of the ends may be agreed at time of inquiry and order.

HOT-ROLLED ROUND BARS STRAIGHTNESS TOLERANCES (UNI EN 10060:2004)

Nominal diameter mm	Tolerance mm
 $d \leq 25$	not established
$25 < d \leq 80$	$q \leq 0,4\% \text{ di } L$
$80 < d \leq 250$	$q \leq 0,25\% \text{ di } L$

the straightness shall be measured along the total length of the bar

HOT-ROLLED ROUND BARS ROUNDNESS TOLERANCES (UNI EN 10060:2004)

The roundness or ovality error is the difference between the bigger and the smaller diameter of the same section. It shall be measured at least 100 mm from the ends of the bar and shall not exceed over 75% of tolerance on diameter.

WIRE RODS TOLERANCES

Wire rod in free cutting steels, case hardening steels, steels for quenching and tempering, steels for surface hardening, stainless steel		
tolerance in accordance to EN 10017: 2002		
Diameter mm		Tolerance mm
from	to	
5,0	9,5	± 0,3
10,0	15,5	± 0,4
16,0	25,0	± 0,5
26,0	39,0	± 0,6
40,0	50,0	± 0,8

Wire rod in steels for cold heading and cold extrusion		
tolerance in accordance to EU 108-72 grade A - UNI 7356-74		
Diameter mm		Tolerance mm
from	to	
5,50	10,00	± 0,25
10,50	15,50	± 0,30
16,00	21,50	± 0,35
22,00	30,00	± 0,40

WIRE RODS ROUNDNESS TOLERANCES (EN 10017:2002)

The roundness or ovality error is the difference between the bigger and the smaller diameter of the same section. It shall be measured at least 100 mm from the ends of the bar and shall not exceed over 80% of tolerance on diameter.

BRIGHT BARS TOLERANCE

BRIGHT STEEL PRODUCTS CLASSES TOLERANCES (UNI EN 10278:1999)

Delivery condition	Tolerance class according to ISO 286 - 2					
	h7	h8	h9	h10	h11	h12
Cold drawn	-	-	R	R	R - H - S	R - H - S
Turned	-	-	R	R	R	R
Ground	R	R	R	R	R	R

The dimensional tolerances shall be chosen among those allowed in the table

R = Round - H = Hexagon - S = Square

BRIGHT STEEL BARS RODACCIAI STANDARD DIMENSION TOLERANCES

	Cold drawn - Round	Cold drawn hexagon - Square	Turned	Ground
DIMENSIONAL TOLERANCES	h10	h11	h10	h9

If not differently agreed at time of inquiry and order, the dimension tolerances for bright steel bars shall be in accordance to values provided in table

BRIGHT STEEL BARS DIMENSION TOLERANCES (UNI EN 10278:1999)

Nominal dimension mm		h7	h8	h9	h10	h11	h12	k13*
from	to							
1	3	0,010	0,014	0,025	0,040	0,060	0,100	+ 0,14
3	6	0,012	0,018	0,030	0,048	0,075	0,120	+ 0,18
6	10	0,015	0,022	0,036	0,058	0,090	0,150	+ 0,22
10	18	0,018	0,027	0,043	0,070	0,110	0,180	+ 0,27
18	30	0,021	0,033	0,052	0,084	0,130	0,210	+ 0,33
30	50	0,025	0,039	0,062	0,100	0,160	0,250	+ 0,39
50	80	0,030	0,046	0,074	0,120	0,190	0,300	+ 0,46
80	120	0,035	0,054	0,087	0,140	0,220	0,350	+ 0,54
120	180	0,040	0,063	0,100	0,160	0,250	0,400	+ 0,63
180	200	0,046	0,072	0,115	0,185	0,290	0,460	+ 0,72

* field not included in EN 10278

For "h" tolerance the dimensions are all below the nominal dimensions. The maximum value corresponds to the nominal dimension, while the field amplitude of tolerance is listed in the table.

Actual dimension of the bar shall be measured at least 150 mm from the end of the bar, in accordance to EN 10278.

The table includes also the **k13** tolerance, which Rodacciai uses for rough turned stainless steel products (1X process route). This deviation is over the nominal dimension.

BRIGHT STEEL BARS STRAIGHTNESS TOLERANCES

STRAIGHTNESS TOLERANCE COLD DRAWN PRODUCTS IN BARS (UNI EN 10278:1999)

Product form	Steel group	Nominal diameter mm	Deviation max mm
ROUNDS	< 0,25% C		1,0
	≥ 0,25% C alloy steels quenched and tempering steels		1,5
	stainless steels tool steels		1,0
SQUARES AND HEXAGONS	< 0,25% C	d ≤ 75 mm	1,0
	≥ 0,25% C alloy steels quenched and tempering steels		2,0
	stainless steels tool steels		1,0
SQUARES AND HEXAGONS	< 0,25% C	d > 75 mm	1,5
	≥ 0,25% C alloy steels quenched and tempering steels		2,5
	stainless steels tool steels		1,5

Unless otherwise specified, the tolerances of this table will be applied

BRIGHT STEEL BARS OUT-OF-ROUND TOLERANCES (UNI EN 10278:1999)

Maximum deviation from out-of-round shall be no more than half the specified tolerance and in any case never above the upper limit of tolerance.