



## Section 2 Bright Bar Straightness Tolerance

### 2.1 B.S.970 Part 3 1991

Drawn and turned bars are supplied to following table and shall be measured as a maximum deviation from straightness in any 3000mm portion of the bar.

Straightness tolerances		
Section	Steel grade	Permitted variation
Round	<0.25% carbon	1 in 1000
	≥ 0.25% carbon, alloys and all heat treated grades	1 in 500
Square and hexagon	< 0.25% carbon ≤75mm	1 in 750
	> 75mm	1 in 500
	≥ 0.25% carbon, alloys and all heat treated grades	1 in 375
Flat	< 0.25% carbon	1 in 500
	≥ 0.25% carbon, alloys and all heat treated grades	1 in 375

Note: Calculation of straightness for non standard length is based on the formula:-

$$\frac{(\text{Non-Standard length})^2}{(\text{Standard length})^2} \times \text{Tolerance}$$

1 in 1000 = 9mm maximum deviation in a 3000mm bar

Straightness is a perishable commodity and care in handling is required - particularly in small section sizes of high width to thickness ratios.



## 2.2 EN 10278: 1999

Where specified at the time of enquiry and order, or in the cases of dispute an agreed number of bars shall be evaluated for straightness in accordance with one of the methods specified below to meet tolerances in the following table.

Product form	Steel group	Nominal dimension			Deviation in 1 metre max. <sup>1)</sup> mm
Round	<0.25% C				1.0
	≥ 0.25% C, alloy steels, quenched and tempered steels				1.5
Square and hexagon	<0.25% C	d	≤	75mm	1.0
	≥ 0.25% C, alloy steels, quenched and tempered steels	d	≤	75mm	2.0
	<0.25% C	d	>	75mm	1.5
	≥ 0.25% C, alloy steels, quenched and tempered steels	d	>	75mm	2.5
Flat		w	<	120mm	on width:
	<0.25% C				1.5
	≥ 0.25% C, alloy steels, quenched and tempered steels				1.5
		w	<	120mm	on thickness:
	<0.25% C				1.5
	≥ 0.25% C, alloy steels, quenched and tempered steels				2.0
		w	≥	120mm	on width:
	<0.25% C				1.5
	≥ 0.25% C, alloy steels, quenched and tempered steels	w/t	<	10:1	2.0
		w	≥	120mm	on thickness:
	<0.25% C				
	≥ 0.25% C, alloy steels, quenched and tempered steels	w/t	<	10:1	2.5
		w	≥	120mm	on width:
	<0.25% C				2.0
	≥ 0.25% C, alloy steels, quenched and tempered steels	w/t	≥	10:1	2.5
		w	≥	120mm	on thickness:
<0.25% C				2.5	
≥ 0.25% C, alloy steels, quenched and tempered steels	w/t	≥	10:1	3.0	

<sup>1)</sup> For the method of evaluating straightness see section 2.2.1



## 2.2.1 Methods of Assessing Straightness

### 2.2.1.1 Preferred method

The bar shall be supported on a suitable surface so as to eliminate or minimise sagging.

A 1 m long straight edge shall be placed on the surface of the bar at any position along its length. No part of the straight edge shall be within 150mm of the ends of the bar.

Straightness shall be determined by measuring the maximum gap between the bar and the straight edge by suitable means e.g. feeler gauge. The bar shall be deemed straight where the maximum gap does not exceed the values specified in 2.2.

### 2.2.1.2 Alternative method for round bars

The round bar shall be supported on a sufficient number of centres placed 1 m apart.

Straightness shall be measured by means of a suitable dial or indicator gauge placed at any position between the supporting centres.

The bar shall be deemed to be straight when rotating the bar through 360° the indicated reading (TIR) is not greater than twice the deviation specified in 2.2.

Note: Calculation of straightness for non standard length is based on the formula:-

$$\frac{(\text{Non-Standard length})^2}{(\text{Standard length})^2} \quad \times \quad \text{Tolerance}$$

1 in 1000 = 9mm maximum deviation in a 3000mm bar

Straightness is a perishable commodity and care in handling is required - particularly in small section sizes of high width to thickness ratios.

**These tables have been prepared for guidance purposes only and reference should be made to the standard for full details**

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