



**CORPORATE PURCHASE SPECIFICATION**

AA 102 09

Rev. No. 04

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**BRIGHT STEEL BARS, COLD DRAWN**

**1.0 GENERAL**

This specification governs the quality of Bright Steel Bars, Cold Drawn.

**2.0 APPLICATION:**

Used in the manufacture of threaded and machined components for general engineering purposes.

**3.0 CONDITION OF DELIVERY:**

3.1 Cold drawn, Bright.

3.2 Bars shall be supplied in straight lengths with ends square and true and free from twists and bends.

3.3 The bars shall be given a clear temporary rust preventive (TRP) coating to avoid corrosion during transit & storage. Black TRP coating is not acceptable. Clear TRP used shall be free from pungent smell.

The following clear TRP's are suggested:

- i) Servo RP 150 - M/s Indian Oil Corporation.
- ii) HE - 1612 - M/s. BHEL, Bhopal.
- iii) Rustilo DW - 901 - M/s. Indrol Lubricants and Specialties Ltd.
- iv) Rustpro special - M/s. Tide Water Oil Co.
- v) Any other clear TRP conforming to IS:1154.

**4.0 COMPLIANCE WITH NATIONAL STANDARDS:**

The material shall comply with the requirements of :

IS : 9550- 2001 : Bright Steel Bars

**5.0 DIMENSIONS AND TOLERANCES :**

**5.1 Sizes:**

Bars shall be supplied to the dimensions specified on BHEL order.

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**APPROVED:**  
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5.2 Tolerances:

5.2.1 Round, Hexagonal, Square And Flat Bars:

Unless otherwise specified, tolerances on dimensions shall be as follows:

For cold drawn round bars h10 to table 2 of IS:9550.

For hexagonal and square drawn bars upto and including 80mm h11 and for dimensions above 80mm h12 of table 1 & 2 of IS:9550.

For drawn flats in accordance with table 3 and 4 of IS:9550.

5.2.2 Out of Roundness :

Out of roundness, that is to say the difference between the largest and, the smallest diameters measured over the same cross section in a round bar, shall not exceed one half of the permissible total variation on diameter.

In a square or hexagonal bar, the difference in two dimensions at any cross section (each dimension being the distance between opposite faces in case of square bar and across flats distance in case of hexagonal bar) shall not exceed one half of the permissible total variation specified on size.

5.2.3 Straightness:

Unless other wise agreed to, the permissible deviation shall not exceed 1.5 mm per metre on any running length.

5.3 Length:

Bars shall be supplied in lengths of not less than 2.5 metres.

6.0 MANUFACTURE:

Steel shall be manufactured by the open-hearth, electric, basic oxygen or combination of these processes.

Material shall be manufactured from killed Steel.

Sufficient discard shall be made form each ingot to ensure freedom form piping, harmful segregation and internal and surface defects.

7.0 FREEDOM FOR DEFECTS :

All finished steel bars, shall be sound, straight and free from visible surface defects. They shall be bright and clean.

Bars shall be free from twists and bends.

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## 8.0 CHEMICAL COMPOSITION :

The melt analysis of the material and the permissible variation in the composition of the material from the melt analysis shall be as follows:

Element	Melt analysis, percent,		Permissible variation, percent, max
	min,	max	
Carbon	0.35	0.45	± 0.02
Silicon	0.05	0.35	± 0.03
Manganese	0.60	0.90	± 0.04
Sulphur	-	0.055	+ 0.005
Phosphorous	-	0.055	+ 0.005

## 9.0 TEST SAMPLES:

## 9.1 Tensile Test:

Bars from the same cast and of the same size shall be grouped in batches. One tensile test piece shall be cut from a selected bar each batch.

For bars of sizes upto and including 27 mm, the test pieces shall be machined concentrically from the bars selected for test. Alternatively, the full cross-section of the bars may be tested.

For bars of sizes over 27 mm and upto and including 65 mm, the longitudinal axes of the test pieces shall be not less than 14 mm from the surface of the bars selected for the test.

For bars of sizes over 65 mm, the longitudinal axes of the test pieces shall coincide with a position midway between the centre and the surface of the bars selected for test.

Tensile test pieces shall have a gauge length equal to  $5.65\sqrt{S_0}$ .

## 10.0 MECHANICAL PROPERTIES:

When tested in accordance with IS: 1608, the test pieces shall show the following properties:

Size, mm		Tensile strength, N/mm <sup>2</sup> minimum,	Yield strength N/mm <sup>2</sup> minimum,	Elongation on $5.65\sqrt{S_0}$ gauge length %. minimum
Over	upto & incld			
-	20	665	510	8
20	40	630	470	8
40	63	590	460	10
63	-	570	430	11

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11.0 TEST CERTIFICATES :

Three copies of test certificates shall be supplied, unless otherwise stated on the order.

In addition, to the above, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

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BHEL order No.

Supplier's Reference :

Name

Identification No.

Melt No.

Results of Tests :

Results of chemical analysis and mechanical tests.

12.0 PACKING AND MARKING :

The material shall be suitably packed in bundles, hessian wrapped, to prevent sagging, corrosion and damage during transit. A suitable clear temporary rust preventive shall be applied on all the bars. Each bar over 50 mm shall be stamped at one end with " AA 10209 " Bars 50 mm and below shall be bundled together and tied with wire at 3 to 4 places along the length of the bar.

A metal label shall be securely attached to each bundle and shall bear the following information:

AA 10209: Bright Steel Bars, cold drawn.

BHEL Order No.

Consignment/Identification No.

Size and Weight.

Supplier's Name

13.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) IS:1154

2) IS:1608

3) IS:9550

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PREFACE SHEET

BRIGHT STEEL BARS, COLD DRAWN

FOR INTERNAL USE ONLY  
REMOVE THIS PREFACE SHEET BEFORE ISSUE TO SUPPLIERS

Comparable Standards:

- 1. INDIAN : IS : 9550 - 2001

Suggested/Probable Suppliers And Grades:

Refer plant vendors list

User Plant References:

- 1. BHOPAL : PS 102 09.
- 2. HEER, HARDWAR : 0500. 007  
Gr: C 40, Cold Drawn

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