

**MATERIAL STANDARDS  
DIESEL LOCO MODERNISATION WORKS  
PATIALA**

NUMBER	MISC - 126
INDEX	
SHEET	1 OF 2
DATE	12-8-2010

TITLE : BLACK STEEL BARS (ROUND)  
( WITH CHEMISTRY AS PER IS:1875, CLASS-4 )

**1. SCOPE :**

This specification covers Magnaflux Inspection Quality Black Steel Bars, suitable for Heat-Treatment. The steel shall be made in Electric-arc Furnace, Fully Killed, VAD treated (with secondary refining) or through in Blast Furnace — Basic Oxygen Furnace & finally Ladle refining Furnace route. (A2)

**2. CHEMICAL COMPOSITION :-**

As per IS-1875, Class-4

**2.1 TOLERANCE LIMIT IN CHEMISTRY:**

As per IS-1875

**3. SURFACE DEFECTS:**

Total depth of surface defects (like Seams, Laps, Folds, Scar-marks, Total Decarburization or any other harmful defect) shall be as per IS: 1875 (Latest version)—against the corresponding size.

**4. MACRO STRUCTURE :**

Macro. examination of deep acid etched sections of Bars (in the as received condition) shall show no evidence of defects like shrinkage-cavity, blow-holes, porosity, piping, hairline-cracks, seams or any other harmful defect that would adversely effect the subsequent processings / end use; beyond the above permissible limit ( ref. clause-3).

**4.1 MICRO STRUCTURE:**

Microstructure shall reveal uniformly equiaxed grains of 'Ferrite' & 'Pearlite'. The grain size shall be of ASTM NO.5 or finer. The Micro. structure shall be free from any Banding / Lamination /Harmful Segregation and any other detrimental defect that may adversely effect subsequent Thermal Processings (Ref. clause 1-Scope).

**4.2 MECHANICAL PROPERTIES & HARDNESS :-**

As per IS-1875 (Latest Version)

ALT No.	(A1)	(A2)
VALIDATED W/M/D		
CHD. SSE/D		
DRN. J.E		
ALTERATION	SPEC. REVISED & RE-DRAWN. (VIDE DLW Rev. - R2).	SCOPE REVISED (VIDE CIME'S APPROVAL ON DATE 4-8-2011)
SSE/D		
WM/D		
DATE	12-8-10	12-8-11

BASED ON DLW SPEC. - MISC -126 Rev - R2 ( SUPERSEDES DMW SPEC. - MISC -126 Alt - NIL ).

cont ...

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**5 CLEANLINESS:**

The inclusion rating shall not be worse than the following limits (as per IS: 4163):-

Type	Thin Series	Thick Series
A	1.5	1.0
B	1.5	1.0
C	1.5	1.0
D	1.5	1.0

**6. PURCHASE CONDITION:**

Hot- worked, Normalized, Machine-Straightened Bars and with Sawn /Machine-cut ends.

**7. DIMENSIONAL TOLERANCES:**

As per IS-1875 (Latest version) / as specified by purchaser, for the Corresponding size.

**8. INSPECTION :**



Two copies of certified test reports shall be sent to the Chief Inspecting Officer / C.M.T., DMW/PTA. The report shall furnish Chemical Composition, Cleanliness-Status of the Product, Heat-treatment rendered with, Hardness & Micro structural details including Grain size, Depth of Decarburization, etc.; as per the above mentioned clauses.

**9 . RETEST :** If initially selected sample fails in any of the tests, retest shall not be carried out.

**10. Marking:** Vendor Identification color code shall be provided as per DMW Specification No. Misc. 92 on each Bar with Heat-treatment batch no. / Month / Year of Manufacture, etc.

**11. All other conditions, not specified herein (like 'Workmanship and finish', Magnetic particle inspection' etc.); must meet the relevant AISI/ASTM Standard / Standards.**

**12. Raw material / Bars supplied should have identification code as per DMW specification no. - MISC - 153.**

VALIDATED WM / D	
CHD. SSE / D	
DRN. J E	