

ALT No.	(A5)
VALIDATED ADE	✓
DRN. JE	✓
CHD. SSE/D	✓
VALIDATED ADE	✓
DATE	8/6/09

ALTERATION
SPECN. REVISED AS PER DLW AUT-R6.
(SUPERSEDES ALT-A4.)
BASED ON DLW SPEC. NO. D81340 ALT. R6

MATERIAL STANDARDS DIESEL LOCO MODERNISATION WORKS PATIALA	NUMBER	D81340
	INDEX	MEDIUM CARBON STEEL
MEDIUM CARBON STEEL BARS/BILLETS AND FORGINGS, FORGINGS TO MATERIAL STANDARD No. IS: 2004; CL-4, ALTERNATE AISI C1045 OR IS: 1875 (BARS/BILLETS ETC.), CLASS-4	SHEET	1 OF 2
	DATE	8-6-2009

DESCRIPTION

This specification covers fully killed, medium carbon Steel Bars/Billets and Forgings (of fine grains); suitable for Induction Hardening also and conforming to AISI C1045 Alternate or to IS: 1875, CL- 4 (for Bars/Billets) and IS: 2004; CL-4 (forgings) as the alternate specification.

APPLICATION

For manufacture of Diesel Locomotive/ Components.

MANUFACTURE

The Steel shall be made through Electric furnace/Open - hearth route.

CHEMICAL COMPOSITION (i) As per AISI C1045: -

As determined on fractured Grip of Tensile test Piece.

<u>CARBON %</u>	<u>MANGANESE %</u>	<u>PHOSPHORUS %</u>	<u>SULPHUR %</u>	<u>SILICON %</u>
0.43-0.50	0.60-0.90	0.04 MAX.	0.05MAX.	0.10-0.30

(ii) As per IS: 2004,CL4 (as alternate matl.)

GRAIN SIZE: ASTM No.-5 to 8.

CLEANLINESS STANDARD

The material shall conform to the following Cleanliness Standard (as per IS-4163).

Type A/Sulphide	All Thick Series 0.5 (Max) &
Type-B/ Alumina	All Thin Series 1.5 (Max)
Type-C/Silicate	
Type-D/Globular Oxide	

PHYSICAL & MECHANICAL PROPERTIES

Shall conform to the relevant AISI or IS: Specification.

PURCHASE CONDITION

(a) Hot finished Bars/Billets – As Hot finished and Normalized/Normalized & Tempered and with Bright-finish or as specified in the enquiry/order.

MATERIAL STANDARDS DIESEL LOCO MODERNISATION WORKS PATIALA	NUMBER	D81340
	INDEX	MEDIUM CARBON STEEL
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MEDIUM CARBON STEEL BARS/ BILLETS AND FORGINGS,
FORGINGS TO MATERIAL STANDARD No. IS: 2004; CL-4,
ALTERNATE AISI C1045 OR IS: 1875 (BARS/ BILLETS ETC.), CLASS-4

Cold finished bars – As Cold finished and Stress relieved.
Forgings: Forged and Normalized / Normalized & Tempered, unless
otherwise specified.

(b) Edges: - Cold sawed or hot - sheared square or as specified.

(c) On finished product surfaces, protective-treatment shall be rendered with/ as
per DMW Standard No. D-99999va. On Rough/Proof machined Forgings/Bars,
Antirust Compound shall be applied, in order to avoid rusting etc; during
transportation / handling/ storage.

TOLERANCES

As specifically mentioned in the enquiry/order/drawings. If not specified; the relevant
AISI/SAE/ASTM or BIS standard shall apply.

FREEDOM FROM DEFECTS

The material shall be free from Piping, Harmful Segregation, Seam, Laps, Dendritic
Pattern or any other defect- detrimental to machineability, performance and any other
requirement of the specification. In addition, 'Cold finished Bars' shall be bright,
clean and shall be suitable for use in automatic, semi-automatic and turret lathes.

PACKING

The consignment shall be packed so as to prevent any injury during transit and
handling.

MARKING

Finished material to this standard shall bear suitable identification marks.

CERTIFICATE

Test certificates in duplicate is to be furnished to C.I.O./DMW, by the manufacture;
mentioning results of all the test checks as per this standard.

STANDARDS & PRACTICE

All other conditions, not specified herein, must meet the relevant ASTM/ AISI/ BIS
standards.

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