



# REAFFIRMATION - NOTIFICATION

AA 101 31

Rev. No. 04

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AA 101 31 : COLD-REDUCED MILD STEEL SHIMS

This specification is reaffirmed in 1999.

Please see Instruction on the reverse

Ref :	Approved	Issued	Date	Cum.Sl.No.
CI 23-7-12 of MOM of MRC-S&GPS	MRC S&GPS	CORP. R&D	15.11.99	R 2685

COLD-REDUCED MILD STEEL SHIMS

FOR INTERNAL USE ONLY  
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards :Acceptable Suppliers and Grades :User Plants & Replaced Plant Specifications/References :

- |                     |                                   |
|---------------------|-----------------------------------|
| 1. BHOPAL           | : PS 101 31                       |
| 2. HEERWAR, HARDWAR | : --                              |
| 3. HYDERABAD        | : HY 021 02 99 (Commercial grade) |
| 4. TIRUCHY          | : BM-C 10                         |

Revision: CL. 18.2.13 OF MOM OF  
MRC - S&GPS

Approved:  
INTERPLANT MATERIAL RATIONALISATION  
COMMITTEE - MRC ( S&GPS )

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Aug '76

COLD-REDUCED MILD STEEL SHIMS**1.0 GENERAL:**

This specification governs the quality requirements of Cold Mild Steel Shims of thickness 0.05 to 0.49 mm, supplied in the form of sheets in coils.

**2.0 APPLICATION:**

For shims and other general engineering purposes.

**3.0 CONDITION OF DELIVERY:**

Cold-Reduced sheets in coils.

**4.0 COMPLIANCE WITH NATIONAL STANDARDS:**

There is no Indian standard covering this thickness of material. However, assistance has been derived from IS:2385.

**5.0 DIMENSIONS AND TOLERANCES:****5.1 Sizes:**

Material shall be supplied to the dimensions specified on the order.

**5.2 Tolerances:**

The thickness of shim/sheet shall comply with the following:

**5.2.1 Thickness:**Average thickness of consignment:

The mean of the thickness of each lot of 5 sheets selected from a package shall not deviate from the ordered nominal thickness by more than  $\pm 2.5$  percent.

Average thickness of individual sheet:

The average thickness of any of the 5 sample sheets selected from a package shall not deviate by more than  $\pm 8.5$  percent from the ordered nominal thickness.

Variation within a sheet:

The thickness of an individual specimen shall not deviate by more than  $\pm 4$  percent from the average thickness of the sheet.

**5.2.2 Length and Width:**

+ 5 mm

- 0 mm

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5.2.3 Shape:Flatness:

Sheet shall be commercially flat when placed vertical and horizontal positions.  
Sheets hanging from vertical position shall not show bowing of more than 5 mm.

Edge waviness:

Sheet lying on a flat surface shall not show edge waviness of more than 3 mm.

Squareness:

The maximum out of squareness shall not normally exceed 0.15 percent of the length. However, 5 percent of the sheet may exceed this limit to a maximum of 0.25%.

Camber:

Maximum camber on any edge shall be such that the deviation from the straight line does not exceed 0.15 percent on any side.

6.0 MANUFACTURE :

The method of manufacture of the material shall be at the discretion of manufacturer.

7.0 TREATMENT:

The hot-rolled strip shall be pickled, cold-reduced with or without intermediate annealing and cleaned, annealed and finally temper-rolled, if necessary, to obtain the desired condition of the material and surface.

8.0 FREEDOM FROM DEFECTS:

The material shall be free from cracks, pitting, blisters, laminations and other surface defects.

9.0 CHEMICAL COMPOSITION :

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

Element	Percent, Max.	Permissible variation, Percent, Max.
Carbon	0.12	0.02
Manganese	0.60	0.03
Sulphur	0.050	0.005
Phosphorus	0.050	0.005

10.0 TEST SAMPLES:Hardness Test:

One sample shall be selected from each package.

**11.0 HARDNESS (VICKERS):**

When tested in accordance with IS: 1501, the test pieces shall have a Vicker's hardness in the range of 80-120 HV.

**12.0 INSPECTION AT SUPPLIERS' WORKS :**

Whenever specified, tests and inspection are to be conducted in the presence of BHEL's representative.

BHEL's representative shall have free access at all times while the work on the contract is being performed, to all parts of the manufacturer's works. The manufacturer shall offer BHEL's representative all reasonable facilities without charge to satisfy the latter that the material is being furnished in accordance with this specification. The manufacturer shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities do not exist at his works, the manufacturer shall make necessary arrangements for carrying out the prescribed tests elsewhere. The manufacturer shall notify BHEL's representative in advance about the readiness of the material for inspection and testing.

BHEL reserves the right to test the material at BHEL's works and the final acceptance of the material shall be based on these test results.

**13.0 TEST CERTIFICATES :**

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

In addition, 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 :

**BHEL References :**

AA 10131 : Rev.No.04

BHEL Order No.

**Supplier's References :**

Name

Identification No.

Melt No.

Process of manufacture.

**Results of tests :**

Dimensional inspection.

Results of chemical analysis and mechanical tests.

**14.0 PACKING AND MARKING :****14.1 Packing:**

The material shall be supplied in coils of continuous strip. The nominal weight of each coil shall be 1800-2000kg.

The nominal internal diameter of coil shall be 500 mm.

Sheet shall be protected to prevent damage and rusting during transit.

Sheet shall be packed in line with IS: 2385.

**14.2 Marking:**

A metal label shall be securely attached to each bundle and shall be marked with the following:

AA 101 31 : Cold - Reduced M.S Shims  
BHEL Order No.  
Consignment / Identification No.  
Weight, Size and Thickness  
Supplier's Name and Grade  
Melt No.  
Packet/ Bundle No.

**15.0 REJECTION AND REPLACEMENT :**

If the material does not comply with the requirements of this specification during receipt inspection at BHEL or any defect is found during the course of further processing, such material shall be rejected notwithstanding any previous certification of satisfactory testing and/or inspection.

The manufacturer shall undertake to replace the rejected material of his own cost and the rejected material shall be taken back by the supplier after fulfilling the commercial terms and conditions.

**16.0 REFERRED STANDARDS :**

The following is the list of the latest standards, as published by the respective issuing bodies, referred to in this specification.

1. IS:228

2. IS:1501

3. IS:2385