



NEW FRONTIERS. NEW DREAMS

COMPANY STANDARDS

TITLE:

HIGH STRENGTH
STRUCTURAL STEEL
(C1002 ISSUE - 03)

PAGE No. OF

DATE: 2008-04-24

INFORMATION SHEET - 1/1

IMPORTANT NOTE :

1. INFORMATION IN THIS SHEET SHALL BE FOR INTERNAL USE ONLY.
2. REMOVE THIS PAGE BEFORE ISSUE TO THE SUPPLIER.

ADDITIONAL INFORMATION :

1. Colour coding shall be Grey - Aluminium White - Blue. For further details refer to Company Standard PR1002-C.

2. After ensuring that material is supplied in corrosion free condition, suitable corrosion preventives shall be applied to suit storage and process.

3. PRE-HEATING FOR WELDING :

When ruling section diameter or thickness of the part to be welded is in excess of 25 mm, it is advisable to pre-heat the weld zone to eliminate the possibility of cracking depending on joint configuration. Refer relevant WPS.

4. EQUIVALENT SPECIFICATIONS :

- a) National specification : IS : 2062 Latest issuance
- b) Indigenous products : SAILMA 410 HI / SAILMA 350 HI
- c) See branch standards for applicability.

5. REPLACEMENT :

The material procured against this standard will find application as replacement to the following materials mentioned in the existing drawings :

SHT55, SHT60H, SM50

6. Consequent to issue of this standard, procurement of material shall not be made by quoting against the above mentioned National / Collaborator / indigenous standards / grades but shall be made only against this standard.

However, if the material is offered by any supplier claiming it to be of equivalent specification, it can be accepted against this Company Standard, after duly getting co-ordinated from Product Engineering and Quality Engineering Departments for their properties. Such material shall be procured, stocked and issued only under this standard number with the colour code identified for this material.

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0. GENARAL INFORMATION :

This Issuance supersedes C1002 Issue-02 dated 1996-12-23 and this issuance is prepared to facilitate adoption of IS : 2062 - 2006, wherein, the following changes have been made :

- International grade designation system based on yield strength is adopted.
- Requirements of IS : 8500 and IS : 1977 have been merged.

This Issuance provides for two grades, grade A and grade B based on grades E350 and E410 of IS : 2062-2006 respectively, whereas the earlier standard was based on IS : 8500 -1991.

The grades will facilitate procurement of indigenous grades SAILMA350 HI and SAILMA410 HI for specific requirements. Requirements have been brought out in the branch standards for plates and flats of typical dimensions.

These steel grades meet the requirements of fusion welding.

1. SCOPE :

This standard covers the requirements of two grades of high strength structural steel of fusion welding quality and specifies chemical composition, mechanical properties and quality requirements.

2. QUALITY REQUIREMENTS :

- Terminology, supply, manufacture, chemical composition, mechanical properties and testing, dimensions & tolerances shall be as per IS : 2062 - 2006 and further revisions of the Indian standard, if any.

3. SPECIFIC REQUIREMENTS :

3.1 FREEDOM FROM DEFECTS - WELD REPAIRS :

Material supplied shall be free from mill scale, heavy rust, corrosion pitting, cracks and laminations.

Minor surface defects may be removed by the manufacturer/supplier by grinding provided, the thickness is not reduced locally by more than 4 % below the minimum specified nominal thickness.

Weld repair for removal of surface defects is not permissible.

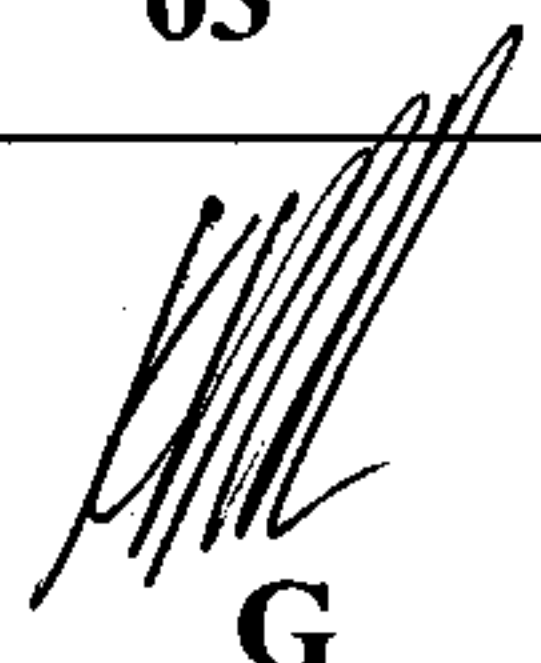
PREPARED BY:CSD/
CFWC-MATERIALS

ISSUE No. :
03

REPLACES:
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REF :
IS : 2062

APPROVED BY :


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4. **CHEMICAL COMPOSITION** : Shall be as per Table -1.**TABLE – 1**

Grade Designation	Grade Quality	Product Analysis Percent max.					Carbon Equivalent (CE) max.
		C	Mn	Si	S	P	
E350 (Fe 490 B)	A	0.22	1.55	0.48	0.050	0.050	0.42
E410 (Fe 540 B)	B	0.22	1.65	0.48	0.050	0.050	0.44

(Earlier designation is shown in brackets)

Notes : 1) Carbon Equivalent based on Ladle Analysis shall be calculated as follows :

$$CE = C + \frac{Mn}{6} + \frac{(Cr + Mo + V)}{5} + \frac{(Ni + Cu)}{15}$$

- 2) Micro alloying elements (V, Ti, Nb, B etc.,) if any, shall not be more than 0.25 % in total
- 3) Copper content shall be 0.20 % max.
- 4) Nitrogen content shall not exceed 0.012 %
- 5) Trace Elements : Supplier shall ensure that elements not indicated above are not present in the product.

5. **MECHANICAL PROPERTIES** : Shall be as per Table – 2.**TABLE – 2**

Grade Designation	Grade	Tensile Strength min. MPa	Yield Strength min. MPa			Elongation % min. (in the gauge length So)	Charpy V-Notch Impact Energy (J) min.	Internal * Bend Diameter min.	
			< 20 t mm	20-40 t mm	> 40 t mm			≤25 mm	> 25 mm
E350 (Fe 490 B)	A	490	350	330	320	22	25 note 3	2 t	3 t
E410 (Fe 540 B)	B	540	410	390	380	20	25 note 3	2 t	3 t

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Notes :

- 1) t is the thickness of the test piece
- 2) * Transverse to rolling direction
- 3) Minimum Charpy V-notch impact energy is to be guaranteed at minus 20 °C.
- 4) The impact values are given for a standard test piece of 10 mm x 10 mm.
- 5) Impact testing is not required for nominal product thickness/diameter below 12 mm.

6. MARKING :

The products shall be suitably marked to identify the following :

Manufacturer's Name/Trade mark

Material and Grade

Heat number

7. CERTIFICATION :

Supplier shall provide the manufacturer's test certificate for each heat of supply indicating conformance to this specification.

8. **Note** : The latest issuance of Standards cited shall be referred.

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