



Product: HOT/COLD ROLLED COILED FLATS FOR FIN WELDED PANELS TO ASTM A576 & SA387 GR12 & GR22 FOR BOILERS

Revision record:

Rev: 00: Fresh issue
Rev: 01: Clause 5.0 to 11.0 Edited and renumbered. Requirement for packing enhanced.
Rev: 02: Text re-written, Criteria for finish clarified.
Rev: 03: Clause 4.0, 5.0, 7.0 & 8.0 altered.
Rev: 04: Cold rolled permitted. Cl. No.2.0, 4.0 modified
Rev: 05: Cl 1 and title of TDC modified
Rev: 06: Cl 3.0 OD Dimension minimum added. Cl 4.0 – Delivered product condition for SA 387 Gr 12 & 22 added. Cl 7.0 – Weldable primer added
Rev 07: Dated 04/04/2017: Cl.4.0 - Details for Heat Treatment added. Cl.9.0 modified
Rev 08: Dated 11/05/2018: Cl.7.0 modified based on feedback from Shop, MM and OP&C.

1. MATERIAL:

ASTM & ASME {Latest on date of Purchase Order (PO)} : Test certificate to indicate actual grade supplied
Carbon Steel - ASTM A 576 Gr.1008, 1010, 1012, 1015 & 1016; Alloy Steel - SA 387 Gr 12 & SA 387 Gr 22
Additional Requirement : As listed below (supplementary to Specification).
Size, Grade and Qty. : As per Purchase order

2. PROCESS OF MANUFACTURE:

Flats to be in hot/cold rolled coiled form and shall be of weldable quality.

3. DIMENSIONAL TOLERANCES:

Thickness : As per specification Coil ID: 508 mm
Width : +/- 0.5 mm Coil OD: Minimum: 1400mm, Maximum: 1800 mm Coil weight: 2 Tonnes (max.)

4. HEAT TREATMENT: As Delivered Condition – For Alloy Steel: Normalized and Tempered as per the temperatures indicated below:

Material	Heat Treatment Temperature (°C)	
	Normalizing	Tempering
SA387 Gr 12 Class 2	920-960	650 - 700
SA387 Gr 22 Class 2	920-960	680 - 750

In order to ensure uniform structure throughout the length of the fin flat, normalizing shall be done in the decoiled condition. The normalizing operation shall be done in a continuous discharge furnace of suitable capacity at the fin manufacturer's works. Normalizing may be done before or after the slitting operation.

Tempering shall be done after the slitting operation.

The furnaces, thermocouples, temperature measuring instruments and recorders used for carrying out the heat treatment operations shall have valid calibration. Calibration shall be done by Government approved Agencies. Calibration reports shall be furnished when called for.

5. FINISH AND REPAIR

Flats to have a workman like finish, be free of harmful defects like cracks, laminations, scrabs etc., and surfaces to be free from scales, rust, pitting, wrinkles etc.

For hot rolled coils the edges of coils to be of machine cut (cold slit) ends in order to ensure squareness of edges & flatness of width. Edges cut by shearing or hot saw cut are not acceptable. Flats to be without fish tails. Coils should not contain any weld seams. Repair by fusion welding is prohibited. When defects are rectified by mechanical means, min. thickness as per specification shall be met and the rectified areas to be smoothly dressed up.

6. MARKING: (in English only)

Following details to be marked on the flats at ends of coils & on the packing by paint stenciling.
1. Specification and grade 2. Melt number 3. Purchase order No 4. Maker's emblem/code
5. Coil number and Weight 6. Size (width & thickness).

7. PACKING & PRESERVATION:

It is the responsibility of the supplier to ensure that no damage occurs during transit.

Individual coils to be packed in air/water tight polythene covering of sufficient thickness and strength *with adequate desiccant* to withstand rigorous handling.

Coils to be wrapped with 1 inch hoop iron bands at one place along the circumference and at 8 places through the eye of the coil and supported on suitable wooden skids/ steel crates.



BHEL – Tiruchirappalli - 620014, India.
Quality Assurance Department
TECHNICAL DELIVERY CONDITIONS

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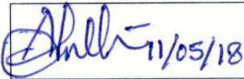
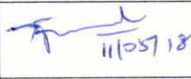
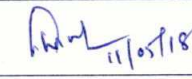
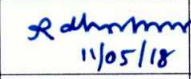
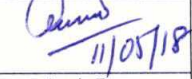
8. INSPECTION AND CERTIFICATION:

Products must be inspected and tested at works and the details as below furnished in mill test Certificate legibly, in English language only:

1. Purchase Order No.(BHEL),TDC No. & Test certificate number
2. Specification and Grade with applicable year of Standard, Quantity, Heat Number, Plate number.
3. Steel making & finishing process
4. Chemistry including incidental elements. Heat Treatment details with actual temperature and soaking time, Mechanical test Results.
5. Dimension report (Width, thickness, flatness, squareness)

9. END USE

The coils are for use as fins by welding to tubes to form in fin-welded tubular panels by automatic submerged arc welding machines, MIG welding or Flux cored arc welding machines.

 11/05/18	 11/05/18	 11/05/2018	 11/05/18	 11/05/18	 11/05/18
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