

**BHARAT HEAVY ELECTRICALS LIMITED**  
**HEEP HARIDWAR INDIA-PIN 249403**  
**FAX NO: 0091 1334 226462/223948**  
**PHONE NO: 0091 1334 284144**

**Sub: Requirement of H/R Sheet Alloy Steel**

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam turbines, turbo generators and so on.

Bids are invited for following items through GeM Portal- <https://gem.gov.in>

Item Description	Mat. Code	Size (mm)	Qty. (Kg)	Delivery
H/R Sheet Alloy Steel Specification- 0500.218 Rev 02	HW1061793010	4 x (600-1000) x (1000-2000)	300	15/11/2024
	HW1061893014	5 x (600-1000) x (1000-2000)	700	15/11/2024

**Remarks-**

1. Delivery period mentioned in enquiry is indicative, bidders to quote their best possible delivery.
2. Quantity tolerance  $\pm 10\%$  is acceptable in view of dimensional tolerances.
3. **Breach of Contract:**

In case of breach of contract, wherever the value of security instruments like performance bank guarantee available with BHEL against the said contract is atleast 10% of the contract value, the same be encashed. In case the value of the security instruments available is less than 10% of the contract value, the balance amount be recovered from other financial remedies (i.e. available bills of the contractor, retention amount, etc. with BHEL) or legal remedies be pursued. The balance scope shall be got done independently without Risk & Cost of the failed supplier/ contractor. Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract. Accordingly, recovery of an amount equivalent to 10% of the contract value shall be made in case of breach of contract.

4. Payment terms shall be as follows:

Type of Bidder	Payment Terms (Number of days)
Micro & Small Enterprises (MSEs)	45 days
Medium Enterprises	60 days
Non MSME	90 days

**Note:** Benefits of MSE (such as EMD Waiver, Tender fee exemption, Price preference, Payment preference etc.) will be given only to those MSE Vendors who are manufacturers of offered items against the NIT. No MSE benefits shall be provided to Agents / Stockists / Dealers / Traders etc. for the items offered but not manufactured by themselves.

5. “A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity’s interests. **The bidder found to have a conflict of interest shall be disqualified.** A bidder may be considered to have a conflict of interest with one or more parties in the bidding process, if”
- a. They have controlling partner (s) in common; **or**
  - b. They receive or have received any direct or indirect subsidy/financial state from any of them; **or**
  - c. They have the same legal representative/ agent for purposes of this bid; **or**
  - d. They have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; **or**
  - e. Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components / sub-assembly/ Assemblies from one bidding manufacturer in more than one bid; **or**
  - f. In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent / dealer. There can be only one bid from the following:
    1. The principal manufacturer directly or through one Indian agent on his behalf; and
    2. Indian/ foreign agent on behalf of only one principal;**or**
  - g. A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; **or**
  - h. In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidder must proactively declare such sister/ common business/ management units in same/ similar line of business.”
6. Rest terms & condition shall be as per latest GeM GTC.

## Pre- Qualification Requirements

PQR Point	Requirements	Vendor's reply												
<b>1</b>	<p><b>Experience Requirement:</b> Vendor must have manufactured and supplied high temperature Cr-Mo-V steel flats / sheets with Chromium <math>\geq</math> 9% against at least one purchase order in the last 10 years from enquiry issue date. Material supplied in hardened and tempered condition will only be considered for experience. Experience details satisfying above requirement to be furnished in table below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sl. No</th> <th style="text-align: center;">Material Grade</th> <th style="text-align: center;">Purchase Order No. &amp; Customer Details</th> <th style="text-align: center;">Dimension</th> <th style="text-align: center;">Quantity (kg)</th> <th style="text-align: center;">Date of supply</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>Vendor to submit purchase order copy and its correlated test certificate in support of above.</p>	Sl. No	Material Grade	Purchase Order No. & Customer Details	Dimension	Quantity (kg)	Date of supply							
Sl. No	Material Grade	Purchase Order No. & Customer Details	Dimension	Quantity (kg)	Date of supply									
<b>2</b>	<p><b>Manufacturing and Testing Facilities:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center; vertical-align: top;"><b>a</b></td> <td>Vendor to confirm that they have in house melting &amp; refining, rolling and heat treatment facility to manufacture enquiry material and dimensions. Details of in-house facilities for melting &amp; refining, rolling and heat treatment are to be submitted. In case of outsourcing of any manufacturing operation, vendor to inform operation outsourced with details of their sub supplier and its manufacturing facility and experience for the same.</td> </tr> <tr> <td style="text-align: center; vertical-align: top;"><b>b</b></td> <td>Details of testing facilities as per the requirement of enquiry specification are to be submitted with offer. In case of outsourcing of any test, vendor to agree to carry out testing at NABL / Govt. / any other lab accrediting agency like ILAC/APLAC etc. approved labs only.</td> </tr> </tbody> </table>	<b>a</b>	Vendor to confirm that they have in house melting & refining, rolling and heat treatment facility to manufacture enquiry material and dimensions. Details of in-house facilities for melting & refining, rolling and heat treatment are to be submitted. In case of outsourcing of any manufacturing operation, vendor to inform operation outsourced with details of their sub supplier and its manufacturing facility and experience for the same.	<b>b</b>	Details of testing facilities as per the requirement of enquiry specification are to be submitted with offer. In case of outsourcing of any test, vendor to agree to carry out testing at NABL / Govt. / any other lab accrediting agency like ILAC/APLAC etc. approved labs only.									
<b>a</b>	Vendor to confirm that they have in house melting & refining, rolling and heat treatment facility to manufacture enquiry material and dimensions. Details of in-house facilities for melting & refining, rolling and heat treatment are to be submitted. In case of outsourcing of any manufacturing operation, vendor to inform operation outsourced with details of their sub supplier and its manufacturing facility and experience for the same.													
<b>b</b>	Details of testing facilities as per the requirement of enquiry specification are to be submitted with offer. In case of outsourcing of any test, vendor to agree to carry out testing at NABL / Govt. / any other lab accrediting agency like ILAC/APLAC etc. approved labs only.													

Sl No.	Quality Requirement	Vendor's confirmation (Y/N)
<b>1</b>	Testing and certification as per ordering specification and documents.	

**Signature with stamp**

**Name:**

**Name of Firm:**

**Designation:**

**Date:**

**(Self-Certification for local content)**

In line with Government Public Procurement Order 2017 dated 16.09.2020, we hereby certify that we

.....  
(supplier name) inform that local content is .....% (indicate percentage of local content) and are

**Class- I local supplier** (meeting requirement of)-

**Minimum Local content 50%**

or

**Class- II local supplier** (meeting requirement of)-

**Minimum Local content 20%**

(mark wherever applicable)

defined by Nodal Ministries/ Departments as per above order for the material against Enquiry No.

.....  
Details of location at which local value addition will be made is as follows:

.....  
.....  
.....

We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and Signature of Supplier

**(Specification)**

**0500.218 Rev 02**



PURCHASE SPECIFICATION

0500.218

PAGES 1 OF 7 PAGES

540 N/mm<sup>2</sup> 0.2% Proof stress 11% Cr-Mo-V Steel  
(For band segments of Steam Turbine)

- 1. GENERAL This specification governs the quality of of creep-resistant Cr-Mo-V-Nb steel flat products (eg. sheet, strip plates).
- 2. APPLICATION The flat products are required for machining and punching of band segments of rotor blades.
- 3. CONDITION OF DELIVERY Hot rolled/cold rolled in heat-treated condition.
- 4. DIMENSIONS AND TOLERANCES
  - 4.1 Sizes  
Flat products shall be supplied to the dimensions as specified on the order.
  - 4.2 Tolerances  
Tolerances on the thickness of flat product shall be as per annexure-I.
- 5. MANUFACTURE Steel shall be made by basic electric furnace, subsequently it should be remelted by electro-slag refined process or vacuum remelting. Any other process of manufacture is subjected to mutual agreement between BHEL & suppliers.
- 6. FREEDOM FROM DEFECTS  
Surface of flat products shall be free from blisters, skin cavities, cracks, laps, laminations etc.  
  
Flat products shall be completely free from laminations, cracks, hairline cracks, laps, scabs and inclusions etc.
- 7. FINISH The surface of the flat products shall be smooth and even. Dent, roll marks, ripples, notches shall not be allowed. It can be dressed off with emery paper to a depth not exceeding the minimum tolerances on thickness.

COPYRIGHT AND CONFIDENTIAL  
The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV, DATE REAFFIRMED

02 03.12.18

TSX	S.KUMAR	(Skumar 16-2-80)
AGREED DEPT.	NAME	SIGN & DATE

REVISION (2) SUBMITTED WITHOUT ANY CHANGE

ISSUED BY :

PS

DATE

16.2.80

STANDARDS DIVISION

2.60

PREPARED CHECKED APPROVED

DATE

*Signature* *Signature* *Signature*

12.10.77

SIGN. &amp; DATE



## PURCHASE SPECIFICATION

0500.218

PAGE 2 OF 7 PAGES

SUPERSEDED  
INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SIGN. &amp; DATE

INVENTORY No

P-2052

## 8. CHEMICAL COMPOSITION

The chemical analysis of the steel shall conform to the following:

Element	Min(%)	Max.(%)
Carbon	0.12	0.19
Manganese	-	0.70
Silicon	-	0.60
Chromium	10.0	11.5
Nickel	-	0.6
Molybdenum	0.60	0.80
Vanadium	0.25	0.40
Sulphur	-	0.025
Phosphorus	-	0.03

## 9. HEAT TREATMENT

The recommended heat-treatment of the test sample shall be as follows:

Hardening in air or oil 1080-1100°C  
Tempering 720-740°C

## 10 SELECTION OF TEST SAMPLES

Test samples for chemical analysis shall be taken from each heat. Two sample for mechanical testing shall be selected from each heat and each heat-treatment batch.

## 11. MECHANICAL PROPERTIES

11.1 The mechanical properties after heat-treatment shall show the following properties when tested in accordance with IS:1608.

Tensile strength in N/mm <sup>2</sup> (Kgf/mm <sup>2</sup> )	705(72) Min.
0.2% Proof stress in N/mm <sup>2</sup> (Kgf/mm <sup>2</sup> )	540(55) Min.
Elongation on 5.65 √ S <sub>0</sub>	15% Min.
Reduction in Area	50% Min.

## 11.2 Hardness

When tested in accordance with IS:1500 shall show brinell hardness in the range of 217-255.

## 12. METALLOGRAPHIC TEST

12.1 The micro-structure of the steel shall be studied and photo-micrograph alongwith report shall be furnished to BHEL. The structure should be free from delta ferrite.

REV. DATE

02

05-12-18



SIGN. & DATE

SUPERSEDED INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited HEEL Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SIGN. & DATE

INVENTORY No

P-2052

12.2 Non-metallic inclusions

The test sample shall be taken longitudinal plane midway between the centre and the surface of the material. The rating of the inclusion content shall be based upon the average length of the inclusions the longest inclusion and the general background when tested as per ASTM E45 plate III. The inclusion rating shall not exceed the following:

- 'A' sulphide type Thin series - 2
- 'B' or 'D' (Globular oxide or Alumina oxide type) Thin series- 2
- 'C' Silicate type Thin series- 2

12.3 Grain size

The average austenitic grain size of steel shall be between 5 & 8 when tested as per IS:2583/ASTM E 112.

**13. ELEVATED TEMPERATURE PROPERTIES**

The elevated temperature properties of of the steel after heat-treatment shall be guaranteed by the supplier as per annexure attached to this specification.

**14. ULTRASONIC TEST**

Each flat product shall be ultrasonically tested to determine its soundness and method of testing shall be mentioned during quotation.

**15. INSPECTION AT SUPPLIER'S WORKS**

BHEL representative shall have all reasonable facilities afforded to him to satisfy himself that the material is being furnished in accordance with this specification. Test shall be witnessed at supplier's works by BHEL or consultants representative and in such cases the supplier shall notify those concerned when the material is available for inspection and testing.

REV. DATE

02

03-12-18



## 16. RETESTS

If any of the selected test specimen fails to meet the specified requirements, two test specimens may be selected for retest without reheat-treatment.

If any test specimen fails because of mechanical reasons such as testing equipment failure or improper specimen preparation, it may be described in the test certificate and another specimen taken for testing.

## 17. TEST CERTIFICATES

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

Test certificates shall bar the following information.

BHEL reference

Purchase order No.

Specification No.

Supplier's reference

Supplier's name

Identification No.

Heat No.

Size and weight of flat products

Heat-treatment details

Process of manufacture

Heat treatment batch No.

Test results

Chemical composition

Mechanical properties

REV.  DATE

02

03-12-10

SIGN. &amp; DATE

SUPERSEDED  
INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SIGN. &amp; DATE

INVENTORY No.

P-2052



PURCHASE SPECIFICATION

0500.218

PAGE 5 OF 7 PAGES

SIGN. & DATE

SUPERSEDED INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

INVENTORY No

8-2052

REV. DATE  
02 03.12.18

Micro-structure report, grain size and non-metallic inclusions.

Ultrasonic reports.

The certificate must be signed by the Chief of the Inspection Department/ Chief Metallurgist of the supplier's plant.

18. PACKING AND MARKING

The melt number, specification number, grade of steel, identification number, batch no. and inspecting authority stamp shall be stamped on the flat products along the rolling direction or on metallic tags attached to the flat product wherever not possible to stamp on flat products and bordered by white paint.

In addition to the above the supplier's name purchase order number, size and net weight of the flat product shall be painted on the top of all the plates and further protected by cost of transparent varnish.

The transportation of the plates shall be made in separate package each package containing the plates of the same heat, same batch or heat-treatment and size. The plate product shall be preserved against corrosion and damage during transportation.





ANNEXURE - I

TOLERANCE ON DIMENSION OF SHEETS

Thickness/ in mm.	Width in mm.	HOT ROLLED		COLD ROLLED
		Width less than 1000mm	Width 1000mm and over	All widths
0.2-04		± 0.07	± 0.07	± 0.03
0.50		± 0.08	± 0.08	± 0.04
1-1.1		± 0.12	± 0.12	± 0.07
1.5		± 0.15	± 0.15	± 0.11
2.5-3.0		+ 0.17 - 0.22	± 0.22	± 0.16
3.5-4.0		+ 0.20 - 0.10	+ 0.20 - 0.10	± 0.20
5.0-5.5		± 0.3	± 0.4	-
6.0-7.0		+ 0.3 - 0.6	+ 0.4 - 0.6	-

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

INVENTORY No Sign. & Date

P-2052

REVISED ME

REV. DATE  
02. 03-12-18



SIGN. & DATE

SUPERSEDED INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL  
The information on this document is the property of Bharat Heavy Electricals Limited HEEP Hardwar. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SIGN. & DATE

INVENTORY No  
82052

ANNEXURE - II

ELEVATED TEMPERATURE PROPERTIES

1. Stress rupture

Temperature  
°C

Stress rupture in N/mm<sup>2</sup>  
(Kgf/mm<sup>2</sup>) in 100,000 hrs.

550

150 (15-13)

2. Creep properties

Temperature  
°C

1% creep in N/mm<sup>2</sup>  
(Kgf/mm<sup>2</sup>) in 100,000 hrs.

550

90 (9)



REV. DATE

02

03-12-19