

Enquiry items along with quantities:

lt. no	Size & Item description	Technical requirement	Quantity in kg
1	2MMX699MMX3316MM, MAGNETIC STEEL SHEET COLD ROLLED	2.0 MM X 699 MM X 3316, MAGNETIC STEEL SHEET ,COLD ROLLED, TO PRODUCT STANDARD HG 10066, GR- 600,REV-03 OR HOT ROLLED GR 600 TO PRODUCT STANDARD AA10913 REV -05.	42000

Quantity variation as per below:

Item-1, Supplies quantity is to be restricted between 42000kg & 40000 kg

NOTE: BHEL PO shall be placed with nominal quantity of 40000 kg with variation allowed upto %5%.

MAKE IN INDIA format (to be filled by OeMs of the participating bidders)

BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

MATERIAL MANAGEMENT – STEEL DIVISION

For this Procurement, Government of India Public Procurement (Preference to Make in India), Order 2017 with its amendments and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

*As per the Provisions of this order, please submit a **self-certification complying with the conditions below on company letterhead duly signed by competent authority.***

I, hereby declare on behalf of M/s. that we are participating in the Enquiry No. floated by BHEL, Bhopal (MP), India and shall comply with following:

1. Public Procurement (Preference to Make in India), Order 2017 *with its amendments* and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

(a) A supplier will be treated as “**Class-I Local Suppliers**”, if the items quoted by bidder have local content equal to or more than 50%.

(b) ‘**Local Content**’ means the amount of value added in India, which shall be total value of item quoted (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, **in percent**.

2. I hereby declare that our firm qualifies as “**Class-I Local Suppliers**”.

a. The Local Content in the items quoted under this Enquiry is Percent

b. Details of location(s) in India where this value addition shall be done, is/are as follows:

- (a)
- (b)
- (c)

(.....)

For M/s.

(Seal & Sign)



TECHNICAL PRE-QUALIFICATION REQUIREMENTS
(TPQR)

HYDRO GENERATOR ENGINEERING DIVISION

DATE: 22-06-2022

REV.: 00

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MAGNETIC STEEL SHEET - POLE & RIM PUNCHING


Following are the Technical Pre-Qualification Requirements (TPQR):


Sr. No.	Description of pre-qualification requirement	Vendor Response	
		Complied / Not complied	Supporting Documents required to accept compliance
1)	Offers are invited preferably directly from mill, however authorized trading houses may also quote. Authorized trading houses have to submit a supplying mill's authority certificate for participating in the tender in original for specific enquiry no. Exxxx on the mill's letter head duly signed by mill's authorized signatory (with full name, Designation, valid email & contact phone number) along with the offer. In the absence of the above authority Letter, offer from stockiest/trading houses are liable for rejection.		Certificate of being Original manufacturer or authorization letter from original manufacturer for distributors/ agents.
2)	Experience of manufacturing and supply (minimum 1 supply) of magnetic steel sheet in last 5 years.(Refer note-3). The supplied material must meet all the below criterion: a. Thickness ≥ 0.8 mm b. Yield Strength ≥ 250 N/mm ² c. Magnetic Flux density ≥ 1.78 Tesla at magnetic field strength of 15,000 Amperes/meter		All following documents (of same supply) to be submitted 1. Purchase order 2. Invoice 3. TC
3)	Compliance of manufacturing as per BHEL specifications.		Clause wise compliance of BHEL respective purchase specification or no deviation confirmation.
4)	Vendors have to furnish self-declaration for having manufacturing capacity to supply within six months the full ordered quantity for the item quoted.		Self-declaration of mill is required
5)	All correspondence shall be in ENGLISH language. If any document provided by vendor is in language offer than English, it must be supported with its English translation.		- Vendor to confirm.

Note:

1. Compliance to above Technical Pre-Qualification Requirements are mandatory. In absence of compliance of above requirements vendor TPQ application is liable to be rejected.
2. BHEL has the right to verify information / confirmation furnished, by asking additional documents, proofs/ Mill's visit etc.
3. The reference date will be the date of enquiry.
4. For P.O submitted for point no 2 above, Vendor to provide Contact details such as mail id, address and contact numbers of mentioned customer for verification purpose.

Sign & seal of Vendor (Name, Email id and Contact number of Vendor)


RITESH KOJBHIYE
DGM (HGE)


NISHANT SHAH
Mgr (HGE)



CORPORATE PURCHASING SPECIFICATION

AA10913

Rev No.05

PREFACE SHEET

MAGNETIC STEEL SHEET - HOT ROLLED Gr. 600 - TG 178

FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

1. British : BS EN 10265 – 1996, Gr: 600 - TG 178 (Material No. 1.0277)
2. International : IEC 404 - 8.5-1989, Gr: 600- TG 178

User Plants and Replaced Plant Specifications/References:

- 1) HEP, BHOPAL : PS10931
- 2) HEEP, HARDWAR : --

Revisions:

CI 33.5.2 of MOM of MRC-E

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.05	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 01-10-2003	Dt:	Year:2020	HEP, Bhopal	Corp.R&D	March, 1981

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CORPORATE PURCHASING SPECIFICATION

AA10913

Rev No. 05

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MAGNETIC STEEL SHEET - HOT ROLLED Gr. 600 - TG 178

1 GENERAL:

This specification governs the quality requirements of permeability magnetic steel sheet, Hot rolled having a minimum 0.2% Proof stress value of 620 N/mm².

2 APPLICATION:

Rim Laminations of Electrical Machines.

3 CONDITION OF DELIVERY:

Hot rolled will be with trimmed edges in straight lengths (sheet form in the ordered thickness, as specified on BHEL order.

Material shall be supplied with a tight adherent oxide coating on both sides, in bundles and shall not contain any welds. The sheets shall be stacked so that their edges are superimposed in a regular manner.

4 COMPLIANCE WITH NATIONAL STANDARDS:

Material shall comply with the requirements of the following national standards and also meet the requirements of this specification.

BS EN 10265 - 1996, Gr: 600-TG 178 (Material No. 1.0277)

Material offered to International Standard - IEC 404 - 8.5 -1989 Gr: 600-TG 178 is also acceptable.

5 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

Magnetic steel sheet shall be supplied to the dimensions specified on BHEL order.

The thickness shall preferably be selected from the following standard sizes, 1.0, 1.6, 1.8, & 2.0 mm.

1mm sheet shall be supplied in cold rolled condition.

5.2 Tolerances on hot rolled sheets:

The material shall be inspected in line with BS EN 10265 and shall comply to the following.

Note: Tolerance as per JIS C2555 is also acceptable, if agreed to BHEL.

5.2.1 Thickness:

5.2.1.1 Nominal Thickness:

Nominal Thickness(mm)		Permitted thickness tolerances for widths(mm)	
Above	Up to	Up to 600	From 600 Up to 1200
1.5	2.0	± 0.20	±0.29
2.0	2.5	± 0.24	±0.31
2.5	3.0	± 0.24	±0.32

Revisions:

CI 33.5.2 of MOM of MRC-E

APPROVED:

INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)

Rev No.05	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 01-10-2003	Dt:	Year:2020	HEP, Bhopal	Corp.R&D	March, 1981



5.2.1.2 The variation in thickness within a sheet, in a direction parallel to the direction of rolling shall not exceed 5% of the permitted tolerance for nominal thickness specified in clause 5.2.1.1(above)

5.2.1.3 The variation in thickness, in a direction perpendicular to the direction of rolling shall not exceed the values in the table, given below:-

Nominal thickness(mm)	Permitted thickness difference for widths(mm)	
	Above	From 600 up to 1200
1.5	±0.12	±0.14

5.2.2 Width (Trimmed Edges):

Width, mm		Permitted Width Tolerance, mm	
From	Up to	Plus	Minus
200	400	1.4	0
400	600	1.8	0
600	1200	6.0	0

5.2.3 Length:

Length (mm)	Permitted Length Tolerance (mm)	
	Plus	Minus
Up to 1000	10	0
Above 1000	1% of Length	0

5.2.4 Flatness:

The maximum distance between the lower face of the sheet and the flat horizontal surface shall not exceed the values given below:

Length, mm	Maximum distance for nominal thickness, mm	
	Upto & including 2 mm	Above 2 mm
Less than 1000	6	6
1000 and above	0.008 X Length	0.007 X Length

5.2.5 Edge Camber:

The gap which characterises the edge camber shall not exceed 0.5% x Length of sheet for material supplied with trimmed edges and above 150 mm width.

6 FREEDOM FROM DEFECTS:

The surface of the material shall be smooth and clean, free from grease, rust, loose scale and other surface defects such as burrs, cutting distortions, dents, waviness, scratches, blisters, cracks etc.

7 MANUFACTURE:

The production process of the steel and its chemical composition are left to the discretion of the manufacturer.

8 TEST SAMPLES:

Test samples of the same heat/melt and thickness shall be selected from the consignment is follows:

Upto 30 tonnes	:	1 sample
Above 30 to 60 tonnes	:	2 samples
Above 60 tonnes	:	3 samples



CORPORATE PURCHASING SPECIFICATION

AA10913

Rev No.05

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The test samples shall be sufficient in size to provide the necessary test pieces. The sample shall be preferably be taken from upper part of the bundle.

9 PROPERTIES:

The material when tested as detailed in BS EN 10265 at a temperature of $27 \pm 2^\circ\text{C}$ shall show the following properties:

9.1 Mechanical:

Tensile strength : 700 - 850 N/mm²

0.2% proof stress : 600 N/mm², min.

Elongation on 80mm gauge length : 10 percent, min.

9.2 Magnetic:

The material when tested on a Epstein frame at an AC magnetic field in amperes/metre shall show the following minimum corresponding values of magnetic flux density in Tesla:

Magnetic field strength A/m	Magnetic flux density Tesla (Minimum)
5000	1.50 for information
15000	1.78 Guaranteed

10 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise specified on 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:

AA10913-Rev 05 / BS EN 10265, Gr:600-TG178 / IEC 404-8.5 Gr:600-TG178, BHEL Order No, Supplier's Name/Grade/Identification No., Size & Weight, Melt No., Packet/Bundle No.

Test results of a) Dimensions & Tolerances, b) Mechanical and c) Electromagnetic properties viz. Magnetic Flux density in Tesla - Guaranteed at 15000 A/m and for information at 5000 A/m.

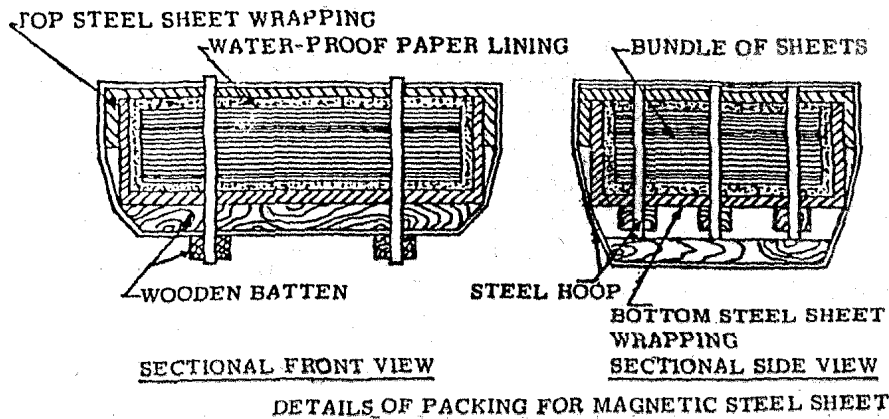
11 PACKING AND MARKING:

11.1 Packing:

Magnetic steel sheets shall be supplied in bundles. The packing shall be seaworthy and shall protect the material from damage during transit. A typical packing which would be suitable is shown below.

Each sheet shall be marked with supplier's grade/reference.

These markings shall be along the rolling direction.

**Note:**

- a) Water proof paper lining shall be preferably Volatile Corrosion Inhibitor (V.C.I.) Coated Paper with an additional polythene (100 micron) enveloped.
- b) Approximate weight of each bundle shall be 2 to 3 tonnes. Bundle weighing 2 metric tonnes is however preferred.
- c) The packing should ensure that there is no seepage of moisture and the sheets reach BHEL completely rust free condition. It shall be strong enough to withstand handling at the docks, at sea and on the road.

11.2 Marking:

A metal label/tag shall be securely attached with each bundle outside its wrapping and shall be legibly marked with the following information.

AA10913, BHEL Order No, Supplier's Name/Grade/Identification No., Size & Weight, Melt No., Packet/Bundle No.

12 REFERRED STANDARDS (Latest Publications Including Amendments):

1. IEC 404- 8.5
- 3) JIS C 2555
- 4) BS EN 10265



उत्पाद मानक
PRODUCT STANDARD
HYDROGENERATOR ENGINEERING

HG - 10066(REV 03)

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गोपनीय एवं अधिकार सुरक्षित इस प्रपत्रा पर दी गई जानकारी भारत हेवी इलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसे प्रत्यक्ष या अप्रत्यक्ष रूप से कम्पनी के हितो को नुकसान पहुँचाने के लिए कदापि उपयोग नहीं किया जावे ।

MAGNETIC STEEL SHEET-COLD ROLLED GR.250/350/450/600/700

1.0 GENERAL:

This specification governs the quality requirements of high permeability magnetic steel sheet cold rolled, having a minimum 0.2% proof value as shown below:

GRADE	0.2% Pr. STRESS	GRADE	0.2% Pr. STRESS
250	250 N/mm ² Min	600	600N/mm ² Min
350	350 N/mm ² Min	700	700N/mm ² Min
450	450 N/mm ² Min		

2.0 APPLICATION:

Rim Lamination of Hydro Generators

3.0 CONDITION OF DELIVERY:

Cold Rolled with trimmed edges in straight lengths (sheet form) in the ordered thickness & size as specified on BHEL order.

Material shall be supplied coated with rust preventive oil coating on both sides, and shall not contain any welds. The sheets shall be stacked so that their edges are superimposed in a regular manner.

4.0 DIMENSIONS AND TOLERANCES:

4.1 Sizes:

Magnetic steel sheet shall be supplied to the dimensions specified on BHEL order. The thickness shall preferably be within the range of 1.5 mm to 4.5 mm. Sheets shall be supplied in straight lengths & shall be flat & edges cleanly sheared & truly squared.

Revision:03 , Dated 23.01.2017
Table 7.1 updated. Elongation values for 600 & 700 grades were 10. Also, elongation values given in table are minimum values.

KP DKC BKS

हाइड्रोजनरेटर इंजीनियरिंग विभाग
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

तैयारकर्ता
SD/
GRP/BKS

अनुमोदनकर्ता
SD/
JKB

जारी करने की
दिनांक
11/07/2005



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गोपनीय एवं अधिकार सुरक्षित इस प्रपत्रा पर दी गई जानकारी भारत हेवी इलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसे प्रत्यक्ष या अप्रत्यक्ष रूप से कम्पनी के हितों को नुकसान पहुँचाने के लिए कदापि उपयोग नहीं किया जावे ।

4.2 Tolerances:

4.2.1 Thickness:

Nominal Thickness (mm)		Permitted thickness tolerances for widths (mm)	
Above	Upto	Upto 1250	
1.5	2.0	+/-0.10	
2.0	3.0	+/-0.15	
3.0	-	+/-0.20	

4.2.2 Width (Trimmed Edges)

Width (mm)		Permitted Width tolerances (mm)	
From	Upto	Plus	Minus
-	1250	+7	0
1250	2000	+10	0

4.2.3 Length:

Length (mm)	Permitted Length tolerances (mm)	
	Plus	Minus
Upto 2000	15	0
Above 2000	0.75% of length	0

4.2.4 Flatness;

The maximum distance between the lower face of the sheet and the flat horizontal surface shall not exceed the values given below;

Length (mm)	Maximum distance for nominal thickness
Less than 1250	8
1250 & above	10



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गोपनीय एवं अधिकार सुरक्षित इस प्रपत्रा पर दी गई जानकारी भारत हेवी इलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसे प्रत्यक्ष या अप्रत्यक्ष रूप से कम्पनी के हितों को नुकसान पहुँचाने के लिए कदापि उपयोग नहीं किया जावे ।

4.2.5 Edge Camber:

The gap which characterizes the edge camber shall not exceed 0.4% x Length of the sheet for material supplied with trimmed edges and above 150 mm width.

5.0 FREEDOM FROM DEFECTS:

The surface of the material shall be smooth and clean, free from grease, rust, loose scale and other surface defects such as burrs, cutting distortions, dents, waviness, scratches, blisters, cracks, pitting, cracked edges etc.

~~6.0 TEST SAMPLES:~~

~~One bend test and hardness test shall be carried out from each lot of 5000 kg. Of material or part thereof, per melt per consignment.~~

~~Where material of more than two thickness are rolled from the same melt, one additional bend test shall be made for each thickness~~

~~Test pieces shall be cut so that the axis of the bend is parallel to the direction of rolling i.e., bending shall be in perpendicular direction of rolling~~

7.0 PROPERTIES:

The material, when tested as detailed in BS EN 10265 at a temperature of 27+/-2 deg C shall show the following properties:

7.1 Mechanical:

GRADE	250	350	450	600	700
TENSILE STR. N/ mm ²	350-450	450-550	550-650	700-850	800 Min.
0.2% PR. STR. N/ mm ²	250 Min.	350 Min.	450 Min.	600 Min.	700 Min.
% EL. ON 80 mm GAUGE LENGTH	22 Min.	18 Min.	14 Min.	8 Min.	8 Min.



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7.2 Magnetic:

The material when tested on a Epstein frame at an AC Magnetic field in amperes/meter shall show the following minimum corresponding value of magnetic flux density in Tesla.

Magnetic field strength A/m	Grade	Magnetic flux Density Tesla (Minimum)				
		250	350	450	600	700
5000 For information		1.6	1.6	1.6	1.5	1.5
15000 Guaranteed		1.8	1.8	1.8	1.78	1.78

8.0 TEST CERTIFICATE:

Three copies of Test Certificate shall be supplied unless otherwise agreed to.

In addition, the supplier shall ensure to enclose one copy of the test Certificate along with their dispatch documents, to facilitate quick clearance of the material.

The test certificate shall bear the following information:

Material grade, BHEL Order No, Supplier's Name/Grade/Identification No., Size & Weight, Packet/Bundle No, Test Results of – a)Dimensions & Tolerances, b) Mechanical & c) Electromagnetic properties viz: Magnetic Flux Density in Tesla – Guaranteed at 15,000 A/m and For Information at 5000 A/m and B.H.Curve form 0 to 15000 A/m.

9.0 PACKING AND MARKING:

9.1 Packing:

Magnetic steel sheets shall be supplied in bundles. The packing shall be sea worthy and shall protect the material from damage in transit. Proper supports are to be provided to avoid bulging/ distortion of the sheets.

Each sheet shall be marked with supplier's grade/ references. These markings shall be along the rolling direction.



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गोपनीय एवं अधिकार सुरक्षित इस प्रपत्रा पर दी गई जानकारी भारत हेवी इलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसे प्रत्यक्ष या अप्रत्यक्ष रूप से कम्पनी के हितो को नुकसान पहुँचाने के लिए कदापि उपयोग नहीं किया जावे ।

Note :

Water proof paper lining shall be preferably Volatile Corrosion Inhibitor (V.C.I) Coated paper with additional polythene (100 micron) enveloped.

Approximate weight of bundle shall be 2 to 3 metric tons. Bundle weighing 2 metric tons is however preferred.

The packing shall ensure that there is no seepage of moisture and the sheets reach BHEL in completely rust free condition. It shall be strong enough to with stand handling at the docks, at sea and on the road.

9.2 Marking

A metal label/tag shall be securely attached with each bundle, outside its wrapping and shall be legibly marked with the following information:

BHEL Order No, Supplier's Name / Grade / Identification No, size & weight, Melt No., Packet / Bundle No.

Revision History : -

Rev No.	Detail	Initiated By	Approved By
01	Product standard updated to include all grades (Dt.11.06.16)	-	JKB
02	Sr. No. 6 Deleted (Dt. 30.12.2009)	-	JKB



ANNEXURE 1

TEST CERTIFICATE FORMAT (Clause 1)

1. Name of Varnish Manufacturer :
2. Type of Varnish :
3. PROPERTIES OF THE VARNISH
 - 3.1 Type of resin :
 - 3.2 Type of filler :
 - 3.3 Type of Solvent : Wt. %
 - 3.4 Water content in case of water thinnable varnish : Wt. %
 - 3.5 Solid content : Wt. % Vol. %
 - 3.6 Resin content : Wt.% w.r.t. solids
 - 3.7 Filler content : Wt.% w.r.t. solids
 - 3.8 Density of varnish : g/ml
 - 3.9 Viscosity as per DIN 53211 (4mm, 23°C) : s
 - 3.10 Flame point as per DIN 53213 : °C
4. PROPERTIES OF THE CURED VARNISH FILM AFTER PROCESSING, AS PER SPECIFICATION
 - 4.1 Surface weight of a 7 μ thick varnish layer (Dry weight) : g/m²
 - 4.2 Interlaminar resistance to ASTM A 717/IEC 404 (Franklin Method) : ohm-cm²
 - 4.3 Surface quality : %
 - 4.4 Thermal effect on coating : °C
 - 4.5 Influence on the punching quality of the sheet :
 - 4.6 Resistance to oil, organic solvents, water and ammonia. :
5. DATA OF THE VARNISH PROCESSOR:
 - 5.1 Name of the varnish processor :
 - 5.2 Mode of application :
 - 5.3 Drying temperature : °C
 - 5.4 The insulating varnish _____ supplied by _____ is used for our magnetic steel sheet insulation. The varnish is used without any change and as specified by the manufacturer

Date and Signature of the supplier

Note:

Any change in the composition of the varnish or individual substances shall be communicated to BHEL without delay.