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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.		<u>Complete set of wear resistant rubber lining system for wet ball mill</u> 1.0 APPLICATION: These liners are used in limestone grinding Wet Ball Mills in Flue Gas Desulfurization unit. 2.0 TECHNICAL: This specification governs the procurement of complete set of wear resistant rubber lining system (SBR based rubber) for Wet Ball Mill of diameter 3950 mm X Length 7490 mm. Set of liner shall include shell liner, Feed end head liners, discharge end head liners along with necessary hardware for fixing arrangement. Lifter bars have to be fastened to the shell by means of clamp block (which slide into the grooves provided at the underside of the lifter bars), washers and nuts. The fastening system shall be leak-proof and designed to utilize rubber flexibility to the maximum & 6 mm thick rubber backing shall be provided along with standard adhesive. Technical properties of Rubber compound shall be as indicated below: Hardness : 62 (±5) shore A Tensile strength : 155 Kg/sq cm (minimum) Elongation at break : 500-700% Din abrasion loss : 80 mm³ (maximum) Specific gravity : 1.12 (±0.005) Withstand temp. : below 80° C The mill dimensions are indicated in Annexure II. Lay out of the liners shall be provided by the vendor. Two man-holes are provided at each end of the shell. Vendor shall supply suitable man hole doors lined with rubber liners such that the door can be removed without disturbing the other liners. 3.0 GUARANTEES: 3.1 The minimum guaranteed wear life shall be 8000 hours (without repair or reversal of liners) for the lime stone as specified in Annexure-I.			

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.		3.2 The supplier shall give back to back guarantee for wear life of liners as per terms and conditions of applicable contract. 3.3 Failure due to manufacturing defects (generally leading to breakage/ catastrophic failure of liners elements) shall be replaced and installed immediately. 4.0 <u>Infrastructure for providing Technical Services for:</u> Bidder shall have the sufficient infrastructure for the following after sales services - Supervision of erection and commissioning. - Performance monitoring with respect to wear life. - Documentary evidences/confirmation for the above shall be submitted. 5.0 <u>QUANTITY REQUIRED PER MILL</u> 1) Complete set of liners for shell (with inspection door), Discharge Head, delivery head as per the drawing in Annexure II. 2) 6 mm back up rubber material with adhesive required for the same 3) Hardware for fastening of liners. 6.0 <u>MANUFACTURING PROCESS AND QUALITY PLAN:</u> 6.1 A detailed manufacturing process (along with the process control parameters) and manufacturing and test facilities data shall be submitted for review by BHEL. 6.2 Material used for the manufacture of the liners shall be specified along with the technical details. The details of the patented portion of the technology need not be provided, however the generic name of the proven patented technology along with the broad details shall be provided. 6.3 A Quality plan with stage wise inspection and acceptance criteria shall be submitted for approval by BHEL and/or customer. 6.4 The PROCESS CONTROL shall consist of 100% testing the quality of mixed compound in a Rheometer to ensure that each batch is consistent with the proper proportion of each ingredient of the compound so as to result in a correct and standard quality of product to give desired results in installations.			

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7.0 INSPECTION:

7.1 The inspection of liners will be as per the approved Quality plan.

7.2 Tests and inspection are to be conducted in the presence of BHEL/ customer representatives as per approved Quality plan. The representatives shall have free access at all times while the work on the contract is being performed. The supplier shall offer all the tools and tackles required for inspection to the inspection agency.

8.0 TEST CERTIFICATE:

All the liners shall be identified with a serial number. Supplier shall supply 3 copies of Test certificates with following information for each set:

1. BHEL order number.
2. Supplier's reference and name.
3. Batch Heat No.
4. Results of Hardness Test and all other tests or any other tests as per approved QAP.
5. Drawing no., Material Code.
6. Consignment/ Identification no.

9.0 ACCESSORIES

6 mm thick back up rubber sheet along with its adhesive shall be supplied.

10.0 PACKING:

Liners shall be suitably packed in metallic boxes set wise to prevent damage during transit. Metallic surfaces shall be properly protected with suitable anti-corrosive compound. Each package shall be legibly marked with following information.

1. BHEL Order No.
2. Consignment/ Identification No.
3. Set No.
4. Drawing no., Material Code
5. Weight in Kg
6. Suppliers Name

11.0 SUPERVISION & SERVICES:

Personnel for supervision for Erection and commissioning shall be deputed within a period of one week from the notice given by BHEL.

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TABLE FOR MATERIAL CODE

Var No.	Mill Type	Item Description	Malt. Code
01	4074	Liners of Wet Ball Mill	BA9789005008

List of Annexures

Annexure No.	Description	Remarks
I	TYPICAL LIMESTONE ANALYSIS	04-FW-000-00288/REV02
II	SHELL AND HEAD DRILLING LAYOUT	26221500007-00

RECORD OF REVISION

REV. NO	DATE	REVISION DETAILS	REVISED	APPROVED