BHARAT HEAVY ELECTRICALS LIMITED

RAMACHANDRAPURAM: HYDERABAD: 502032

PULVERISERS ENGINEERING

HP 1203 BOWL MILLS – 8 NOS. / BOILER

PAINTING SCHEDULE FOR BOWL MILLS

PREPARED BY	RAJESH RANJAN		OWNER	NTPC LIMITED (A Government of India Enterprise)
REVIEWED BY	AMAN SURIN		PROJECT	**NORTH KARANPURA SUPER THERMAL POWER PROJECT STAGE-I; 3x660 MW**
APPROVED BY	SATISH GHATGE		CONTRACTOR	BHARAT HEAVY ELECTRICALS LIMITED Hyderabad Equipment Plant (HPEP) Ramachandrapuram, Hyderabad

Certification signature by Digitally signed by Surjeet Singh <surjeet.singh@ntpceoc.co.in> Date: 2015.05.28 11:00:00 IST Reason: CA IV Location: NTPCEOC

DRG NO.: 4410-001-102-PVM-H-007 REV. NO: 01 DATED: 22.05.2015 BHEL DOCUMENT NO.: BA-PS-KARANPURA	Record of Revisions: Rev 00: Initial Submission Rev 01: Revised as per NTPC comments Reference: CC102:1922 Date: 04-05-15.

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SECTION 1: SCOPE

This specification applies to the above contract. Included are all parts and assemblies manufactured by BHEL Hyderabad and its Sister Units, as per NTPC approved execution plan.

SECTION 2: ALL INTERIOR SURFACES OF THE MILL

Interior surfaces:

Those surfaces inside the pulverizer exposed to the mill airflow and coal. Also included are those surfaces inside the pulverizer and not exposed to mill airflow and coal such as the inside of the Journal Housing and inside of the Spring Housing.

A) **Surface preparation**: Commercial Blast SSPC-SP 10 (Swedish Std SA 2.5)

B) **Primer**: Self curing inorganic zinc silicate primer (solids by volume 60% min) Minimum DFT 75 microns. Shop applied immediately after blast cleaning by airless spray technique.

SECTION 3: EXTERIOR SURFACES OF THE MILL WITH SURFACE TEMPERATURE GREATER THAN 95°C AND INSULATED

Exterior surfaces:

Those surfaces visible by someone outside the fully assembled pulverizer.

Components with Surfaces Greater Than 95 °C:

Mill Side Housing Assembly (Externally Insulated).

A) **Primer**: High temperature primer, (1-2) coats. 55-70 micron DFT total.

B) **Intermediate Coat:** High Temperature Paint, (2) coats. 25-30 micron DFT total.

Total DFT 80-100 microns.

SECTION 4: EXTERIOR SURFACES OF THE MILL WITH SURFACE TEMPERATURES LESS THAN 95 °C

Exterior surfaces:

Those surfaces visible by someone outside the fully assembled pulverizer.

Components with Surfaces Less Than 95 C:

All mill components, except the Mill Side Housing Assembly.

A. **Primer**: Self curing inorganic zinc silicate primer (solids by volume 60% min) Minimum DFT 75 microns. Shop applied immediately after blast cleaning by airless spray technique.

C) **Intermediate Coat**: Polyamide cured pigmented titanium dioxide (TiO2) or Micaceous iron oxide (MIO) epoxy based paint. (solids by volume 60% min) Minimum DFT 75 microns. Paint applied by airless spray technique.

D) **Finish Coat (Shop)**: Polyamide cured color pigment epoxy based paint. (solids by volume 40% min) Minimum DFT 75 microns.

E) **Finish –Finish Coat (After Erection)**: of 25 micron DFT (minimum) of Polyurethane based colour pigmented paint (solids by volume minimum 40%).

SECTION 5: GENERAL NOTES

A. Grease and Oil Removal: Special care shall be taken to remove grease and oil by means of suitable solvents.

B. Brush Off Blast Swedish Std Sa 2.5 preparation: Brush Off Blast (SSPC-SP10): All oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint or other foreign matter have been completely removed from the surface by abrasive blasting, except for very light shadows, very light streaks or slight discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating. At least 95% of each square inch of surface area shall be free of all visible residues and the remainder shall be limited to light discolorations mentioned above. Work to the Sa 2.5 requirements.

C. Machined surfaces, thread and contact surfaces are not painted.

D. Bought-out & other miscellaneous items shall be as per BHEL standard painting. This painting scheme shall be applicable for Mills components as mentioned.

SECTION 6: PAINT SCHEDULE

Sl No	Surface Location	Surface Preparation	Primer		Intermediate		Finish Coat			Total DFT
			Paint	No. of Coats	Paint	No. of Coats	Paint	No. of Coats	Shade	µm min
01	Interior Surfaces of Mill (All surfaces, including surfaces above 95°C and surfaces below 95°C.) Such as Anchor Bolt, PGB,Scraper Assy. Etc. Ref Section-2.	Commercial blast Swedish Std SA 2.5	Inorganic Zinc Silicate	2 coats 75 µm min DFT total	NA	-	NA	-	-	75 µm min.
02	Exterior Surfaces of Mill above 95°C (Only Mill Side Assembly) Exterior Surface of the Mill Side Assembly is insulated.	Commercial blast Swedish Std SA 2.5	Inorganic Zinc Silicate (High temperature primer)	1-2 coats 55 µm-70 µm DFT Total	Aluminum Silicone (High temperature paint)	2 coats 25-30 µm DFT Total	NA		Gray RAL 9002	80-100 µm DFT

03	Exterior Surfaces of Mill below 95 °C (All surfaces except the Mill Side Assembly) Includes: Separator Body Assembly, Journal Opening Cover, Spring Assembly, Separator Top, Discharge Valve Components, Adaptors, Outlet Pipes, Seal Air Piping, Planetary Gear Box, Pulveriser Top Platform, Lube Oil System)	Commercial blast Swedish Std SA 2.5	Inorganic Zinc Silicate	2 coats 75 µm min DFT total	Polyamide cured pigmented titanium dioxide (TiO2) or Micaceous iron oxide (MIO) epoxy based paint	1-2 coats 75 µm min DFT total	Finish (Shop) Polyamide cured color pigment epoxy based paint ---------- Finish (after erection) Polyurethane based color Pigment paint (solids by volume 40% min)	1-2 coats 75 µm min DFT Total ------ 1 coat 25 µm min DFT	Grey RAL 9002	225 µm DFT min. ---------- 250 µm DFT min. (total after erection paint)

SECTION 7: INDUSTRY STANDARDS

- SL NO. 01

PRIMER:	**Zinc – rich primer according to SSPC Paint Specification no. 20 – Type I, level 2 primer.**
	ISO 4624 / ASTM D 4541, Adhesion / Cohesion, Pull Off Value is 6 MPa

- SL NO. 02

PRIMER:	**ISO 2409 / ASTM D 3359, Cross cut adhesion, rating 0 per ISO 2409 and 5B per ASTM D 3359**

- SL NO. 03

PRIMER:	**Zinc – rich primer according to SSPC Paint Specification no. 20 – Type I, level 2 primer.**
	ISO 4624 / ASTM D 4541, Adhesion / Cohesion, Pull Off Value is 6 MPa
INERMEDIATE:	**ISO 4624 / ASTM D 4541, Adhesion / Cohesion, Pull Off Value is 16 MPa**
	ISO 1519 / ASTM D522, Mandrel bend test
FINISH (SHOP):	**ISO 4624 / ASTM D 4541, Adhesion / Cohesion, Pull Off Value is 16 MPa**
	ISO 1519 / ASTM D522, Mandrel bend test
FINISH (ERECTION):	**ISO 4624 / ASTM D 4541 Adhesion / Cohesion, Pull Off Value is 14 MPa**
	ISO 1519 / ASTM D522, Mandrel bend test