



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT
ARIYALUR
MECHANICAL SOP**



Issue No. 01	Rev. No: 02	Effective Date: 17.10.2017	SOP/MECH/016
Issued By: M.R		Approved By: HOD (MECHANICAL)	
SOP FOR TABLE & ROLLER HARDFACING WORK			

Scope : This SOP is applicable to Safe working for Mill Roller & Table Hardfacing.

Responsibility : Section Engineer.

Accountability : Section Head – Mills

PPE:

1. Safety helmet,
2. Safety shoe,
3. Mask.
4. Gloves.
 1. Cotton knitted
 2. Leather
5. Ear Plug
6. Safety belt
7. Goggles
8. Welding Shield

Tools:

1. Hammer
2. Box Spanner set
3. Ring Spanner set

Auxiliaries

1. Welding Set
2. Cutting Set

Hazards:

Risks associated

Welding Gas
Motor / material slip

Mitigating Measures

Wear Goggle
Use Proper tools & Methods

Training needs:

1. Emergency preparedness
2. On job training



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Line Clearance required for:

1. Mill drive
2. Classifier drive
3. Mill Fan
4. Booster fan
5. Mill Feed RAL

Procedure:

1. Take shutdown for mill and Open the mill door, torque support doors, Scrapper chamber doors.
2. Start the mill fan to reduce the temperature by cooling the mill.
3. After getting outlet temperature to 40 deg. Stop the fan
4. Take all required Line clearance.
5. Take Confined permit from Safety and process department.
6. Put 24v Lighting inside the mill
7. Provide a watch person near the confined entry.
8. Allow the maintenance workmen to clean the pressure frame
9. Ensure the cleaning completed in pressure frame and workmen returned outside the mill
10. Allow the casual workmen for cleaning the mill table
11. Take Line clearance for mill auxiliary drive and fix the chain for running the table in auxiliary mode.
12. Lock the pressure frame with 2 beams in each end and weld it.
13. Fix the chain blocks with proper belt / sling
14. Provide arrangement for holding the drums
15. Install the wire drums in its position (use chain block for roller hard facing)
16. Outsourced man power responsibilities and work
 - a. Fixing of Welding machines and wire feeders



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- i. For roller hard facing install individual drive for all 3 rollers
 - b. Keeping all panel outside the mill and connect all power cables
 - c. By ensuring DCBL engineer as all welding cable conditions are good and start fixing.
17. Performing Hard facing work
 - a. For Table: Clear the scrapper chamber by running the mill in auxiliary mode and ensure the external circulation in running condition.
 - b. Stop the external circulation once the material cleared.
 - c. Ensure trained persons only entered the mill for performing the hard facing work.
 - d. For roller hard facing: All 3 rollers having individual drive and no need of table rotation.
 - e. Provide compressed air cooling line near the welding area.
 - f. Start the seal air fan for roller hard facing to avoid the entry of dust and foreign materials inside roller.
18. By using templates ensure the welding
19. After completion switch of all machines and drives.
20. Remove all machines tools and tackles.
21. Clear the mill table from scrap materials and metal pieces.
22. Remove the Pressure frame lock
23. Close the door.
24. Empty the scrapper chamber by auxiliary mode operation and ensure all external circulation is in running condition.
25. Clear the line clearance taken
26. Surrender the permits.

Emergency / Emergency Shut OFF:

Switch off all drives and welding panels.

Watch person should ensure all persons got exited



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Bariguard the entry and assemble as per Emergency procedure

Records/Annexure:

1. JSA as enclosed below.
2. Isolation Matrix.

Emergency / Emergency Shut OFF:

3. If any injury takes place, provide First aid and inform to the Safety department or Call Emergency number 3108/9865152222.

JOB SAFETY ANALYSIS:(JSA)

Job Safety Analysis	Job: Hard facing Work	Date: 29 – 06 - 2012	Analysis by: Section Engineer	Reviewed by: Section Head
Title of employee doing job: Section Engineer	Supervisor: Section Head, Out Sourcing Supply Supervisor	Department: Mechanical	Section: Mills	Approved By: HOD-Mechanical
Req'd/recommended PPE: Helmet, Shoe, Nose mask, Cotton Gloves, Leather gloves, Ear plug, Safety belt, Goggles, Shield				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Put on PPE	Exposure to fumes due to welding operation	Wear Goggles	Damaged goggle	Periodic replacement, Watch person should ensure
	Exposure to noise generation	Wear Ear Plug	Damaged Plug	
	Dust inhalation	Wear Nose Mask	Damaged Mask	
Lightings	Electric Shock	Use only 24v lamps	Using 230 v lamps	Watcher should ensure the availability of 24v lamps
Cleaning of Pressure frame & Mill Table	Man Fall	Should allow only trained person to clear the clinker above the pressure frame,	Giddiness may occur to workmen	Vertigo Test should take for workmen
		After completing the Pressure frame cleaning only table cleaning should start	Person can enter without intimation	Watcher should ensure pressure frame cleaning persons came out of the mill



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Cleaning of table with compressed air	Air hose hit to the person	Check the tightness of the hose joints.	hose pipe got burst	Periodic hose maintenance and replacement.
Fixing of pressure frame lock	Body injury	Lift materials with proper lifting tools	Damaged Lifting tools	Ensure the belt / ropes are in good condition. Periodical replacements
Machines and Chain Block Fixing	Body injury	Use proper tools and tackles with certification	Chain block may slip from its lifting position	Inspect the condition of lifting equipments. 1. Lifting ropes / Belts 2. Chain block Periodical replacement is recommended for belts and ropes. Periodical servicing required for Chain blocks Workmen should competent to lift the machines and tools
Fixing of Auxiliary chain for mill gear box	Hand injury	Trained person should involve in job.	Finger may crush between sprocket and chain	Supervisor should take care of working / use proper tools & method
Connecting Welding Panels and cables	Electric Shock	Use perfect cables, earthing should be proper. Cable dressing and cable laying should be proper	Using Damaged cables	No. of joints should not be permitted. Use insulated cable Use insulation tape for cable joints and in terminals. Panels should be keep in outside the mill to avoid exposing to heat.
Welding operation	Man Fall & Dust inhalation and Eye injury	Involve only Trained persons. Since the mill is operating under auxiliary mode Use proper nose mask and goggles and welding shield	Training welders may enter Damaged PPE	Supplier supervisor should ensure the person is competent to do the job. Watcher should ensure the workmen having proper PPE



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				Periodical replacement of PPE
Removal of Machines	Body injury	Use proper tools and tackles with certification	Chain block may slip from its lifting position	Inspect the condition of lifting equipments. 1. Lifting ropes / Belts 2. Chain block Periodical replacement is recommended for belts and ropes. Periodical servicing required for Chain blocks
Removal of mill Auxiliary drive	Hand injury	Trained person should involve in job.	Finger may crush between sprocket and chain	Supervisor should take care of working / use proper tools & method



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S L N o	Activity				Tag / Name of the Equipment									
					Isolation Type									
					Electrical Energy					Other Energy				
1	Raw Mill Inspection	Name and Tag for the Equipment	361 MD2 Mill Main Motor	361SR1 Classifier	361FN3 Mill Fan	361AS1 auxiliary drive Chain not to be connected								
		Name and Tag for the Equipment	331BC1 Mill feed Belt	361FN3/ Booster fan	361 LD4 hot gas inlet louver damper (In closed Condition)									
		Name and Tag for the Equipment	361SD2 hot gas inlet shut off damper (Inclosed Condition)	361LD5 Raw mill fan Out let Louver Damper (Closed Condition)	Triple flap gate									