








**01.03. RISK ASSESSMENT IN THE CEMENT INDUSTRY – GENERAL INFORMATION****01.03.1 SUMMARY OF MAJOR HAZARDS PER AREA OF OPERATION**



<b>AREA OF ACTIVITY</b>	<b>NOISE</b>	<b>ENV. COND.</b>	<b>DUST</b>	<b>ELECTRICITY</b>	<b>MECHANICAL HAZARDS</b>	<b>FALLING MATERIAL</b>	<b>MOVEMENT OF TRUCKS</b>
QUARRYING	X	X	X			X	X
CRUSHING	X		X	X	X	X	X
STORAGE AND MATERIAL MOVEMENT			X		X	X	
GRINDING AND MILLING	X	X	X	X	X		X
SILO CLEAN.		X	X	X	X	X	
CLINKER PRODUCTION	X	X	X	X	X	X	
FILTERING PROCESS	X	X	X	X	X	X	
LOADING AND DELIVERY	X		X		X	X	X
FUEL STORAGE		X	X				X




### 01.03.2 DESCRIPTION OF THE MAIN HAZARDS AND THE CORRESPONDING PREVENTION MEASURES


<u>AREA</u>	<u>HAZARDS</u>	<u>PREVENTION MEASURES</u>	<u>VISUAL APPRECIATION</u>
QUARRYING	<p>Drilling</p> <ul style="list-style-type: none"> <li>• Fall from height</li> <li>• Hurling of material</li> </ul> <p>Movement of heavy goods vehicles</p> <ul style="list-style-type: none"> <li>• The collapse of a floor level</li> <li>• Mechanical movement of the drill</li> <li>• Exposure to noise and dust</li> </ul> <p>Charging and ignition</p> <ul style="list-style-type: none"> <li>• Inappropriate use of explosives</li> <li>• Fall from height</li> <li>• The collapse of a floor level</li> <li>• Hurling of material</li> <li>• Exposure to noise and dust and vibration</li> <li>• Movement of heavy goods vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• The moving parts of the bore holing machinery</li> <li>• Falls from height</li> <li>• Material falling from height</li> <li>• Crushing of quarry table</li> <li>• Hurling of material</li> <li>• Presence of dust and noise</li> <li>• Movement of earth moving equipment</li> <li>• Job safety analysis and work permit</li> <li>• Isolation of the charging and ignition area</li> <li>• Use of minimum explosives</li> <li>• Authorised person in charge</li> <li>• Pre-approved explosion plan</li> <li>• Safety signage</li> <li>• Safety warnings</li> <li>• No smoking</li> </ul>	 




<p>CRUSHER AREA</p>	<p>Loading/ Unloading</p> <ul style="list-style-type: none"> <li>• Track movement (reversing)</li> <li>• Load displacement</li> <li>• Reversing into hopper</li> <li>• Falling rocks during unloading</li> <li>• Absence of reversing barrier</li> </ul> <p>Crusher Operation</p> <ul style="list-style-type: none"> <li>• Stacking of hopper</li> <li>• Accidental start up of crusher</li> <li>• Hazards during unplanned maintenance</li> <li>• Electrical hazards</li> <li>• Work inside the crusher control room</li> </ul>	<ul style="list-style-type: none"> <li>• Uniformly distributed load</li> <li>• Worker movement segregation areas</li> <li>• Existence of safety signage</li> <li>• Implementation of approved codes of practice</li> <li>• Install proper guards and barriers</li> <li>• Guards to isolate mechanical hazards</li> <li>• Maintenance by approved technicians under supervision</li> <li>• Work inside the hopper only under supervision</li> <li>• Concrete walls for the control room</li> </ul>	
<p>RAW MATERIAL STORAGE</p>	<ul style="list-style-type: none"> <li>• Airborne dust</li> </ul>	<ul style="list-style-type: none"> <li>• Use of the stacker and reclaimer system to collect dust</li> <li>• Routine cleaning of the area</li> <li>• Good housekeeping</li> </ul>	

<p>RAW MATERIAL MILLS, HOMOGENISATION AND RAW MATERIAL STORAGE</p>	<ul style="list-style-type: none"> <li>• Back firing of the furnace</li> <li>• Noise</li> <li>• Dust</li> <li>• Absence of protective barrier</li> <li>• Absence of guards</li> <li>• Electrocutation</li> <li>• Hot material</li> </ul>	<ul style="list-style-type: none"> <li>• Use of fuel safety device (fusible link)</li> <li>• Use of a tag in / tag out system during maintenance</li> <li>• Use of a closed circuit surveillance system</li> <li>• Use of a dust suction system (Disab)</li> </ul>	
<p>THE CLINKER PRODUCTION PROCESS PREHEATING OF MATERIAL</p>	<ul style="list-style-type: none"> <li>• High temperatures</li> <li>• Superheated material particles</li> </ul>	<ul style="list-style-type: none"> <li>• Use of a safe system of work – no accidental operation (tag in/ tag out procedures)</li> </ul>	
<p>KILN OPERATION</p>	<ul style="list-style-type: none"> <li>• Back firing of burner</li> <li>• Working near hot surfaces</li> <li>• Working in a hot environment</li> </ul>	<ul style="list-style-type: none"> <li>• Use of a closed circuit surveillance system</li> <li>• Use of a safe system of work – no accidental operation (tag in/ tag out procedures)</li> </ul>	

<p>COOLING SYSTEM</p>	<ul style="list-style-type: none"> <li>• Dusty environment</li> <li>• Accidental hurling of hot material</li> <li>• Use of a high pressure pump to clean the area</li> </ul>	<ul style="list-style-type: none"> <li>• Use of authorised personnel</li> <li>• Use of a dust suction system (Disab)</li> <li>• Use of a safe system of work – no accidental operation (tag in/ tag out procedures)</li> </ul>	
<p>CEMENT AND RAW MATERIAL STORAGE SILO CLEANING</p>	<ul style="list-style-type: none"> <li>• Noise during the cleaning operation</li> <li>• Falling material from the silo walls</li> <li>• Dusty environment</li> <li>• Operator getting overcome by material at the base of the silo</li> </ul>	<ul style="list-style-type: none"> <li>• Use of dust suction system</li> <li>• Floor preparation</li> <li>• Use of safety signage</li> <li>• Use of tag in/ tag out procedures</li> <li>• Use of blind flanges</li> <li>• Continual supervision</li> <li>• Provision of adequate lighting</li> <li>• Provision of sufficient ventilation using bag filters</li> </ul>	

			
<p>PACKAGING</p>	<ul style="list-style-type: none"> <li>• Dusty environment</li> <li>• Falling material</li> <li>• Moving parts of packaging machinery</li> <li>• Movement of heavy trucks</li> <li>• Existence of third parties (truck drivers) in the area</li> </ul>	<ul style="list-style-type: none"> <li>• Use of a dust suction system</li> <li>• Use of appropriate PPEs</li> <li>• Training of personnel</li> <li>• Adequate machine guarding</li> <li>• Use of safety signage</li> </ul>	
<p>LOADING AND UNLOADING</p>	<ul style="list-style-type: none"> <li>• Overhead loads</li> <li>• Use of lifting equipment</li> <li>• Falling of loads</li> <li>• Dusty environment</li> </ul>	<ul style="list-style-type: none"> <li>• Use of authorised personnel</li> <li>• Provision of appropriate maintenance to the lifting equipment</li> <li>• Use of load limiting devices</li> <li>• Routine cleaning of the area</li> </ul>	

<p>MAINTENANCE DEPARTMENT</p>	<ul style="list-style-type: none"> <li>• Toxic fumes from welding operations</li> <li>• Insufficient tag in/ tag out procedures during maintenance</li> <li>• Manual handling causing Musculoskeletal problems</li> <li>• High temperatures</li> <li>• Electricity</li> <li>• Use of hand tools</li> <li>• Bad housekeeping</li> </ul>	<ul style="list-style-type: none"> <li>• Use of a fumes suction system</li> <li>• Trained personnel</li> <li>• Use of hoists</li> <li>• Use of approved and maintained metering devices</li> <li>• RCD 's 30 mA</li> <li>• Routine cleaning – goog housekeeping practices</li> <li>• Use of approved and well maintained hand tools USE</li> </ul>	
<p>FUEL STORAGE</p>	<ul style="list-style-type: none"> <li>• Use of naked flames near fuel storage</li> <li>• The creation of hot spots during maintenance activities</li> <li>• The hurling of hot material in the fuel area</li> <li>• Electrical discharges (Thunderbolt, electrostatic charges during refuelling , short circuits)</li> </ul>	<ul style="list-style-type: none"> <li>• Existence of a work permit system for working near the fuel storage</li> <li>• Maintenance and control of the anti-discharge system</li> </ul>	

<p>USE OF ALTERNATIVE FUELS</p>	<ul style="list-style-type: none"> <li>• Biological hazards from the use of bone meal, used rubber tyres, olive seats, RDF and other solid waste</li> </ul>	<ul style="list-style-type: none"> <li>• Routine cleaning of the area</li> <li>• Use of appropriate PPEs</li> </ul>	
<p>WORK ENVIRONMENT, WORK AREAS AND PASSAGEWAYS</p>	<ul style="list-style-type: none"> <li>• Absence of safety signage</li> <li>• Obstructions in the passageways</li> <li>• Inadequate environmental conditions</li> <li>• Insufficient protection from physiochemical factors</li> </ul>	<ul style="list-style-type: none"> <li>• Use of appropriate safety signage indicating the passageways and emergency exits</li> <li>• Good house keeping of the area</li> <li>• Assessment of the environmental conditions and provision of adequate protection</li> </ul>	
<p>USE OF WORK VEHICLES  (FORK LIFTS, LOADERS UNLOADERS, Disab, )</p>	<ul style="list-style-type: none"> <li>• Insufficient training</li> <li>• Insufficient maintenance</li> <li>• Inappropriate securing of the load</li> <li>• Speeding</li> <li>• Insufficient visibility</li> </ul>	<ul style="list-style-type: none"> <li>• Authorisation and training of personnel</li> <li>• Routine maintenance of the work vehicles</li> <li>• Provision of work instructions</li> <li>• Labelling of the vehicle movement area</li> </ul>	




LIFTING  
EQUIPMENT

- Crush of the load or the lifting mechanism onto operatives
- Fall of the load to be lifted due to the failure of the lifting gear
- Insufficient or inappropriate securing of the load
- Tilting of the load during its transportation
- Crashing of the load on the building
- Electrocutation as a result of lifting mechanism contacting o/h lines

- Use of authorised and trained personnel
- Existence and compliance with work instructions
- Safe operation of the stopping mechanism, the breaks and the lifting lines
- Check on a routine basis the hook mechanism
- Always secure the load using the approved straps
- Always avoid the lifting of loads overhead from working operatives.



**01.03.3 SUMMARY OF USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) PER AREA**

<u>AREA</u>	<u>SOURCE</u>	<u>PPE</u>
<b>QUARRING</b>	<b>DUST</b>	P1 MASK, GOGGLES, UNIFORMS   
	<b>NOISE</b>	<b>EAR PROTECTORS &gt; 80db</b>

		
	FALLING MATERIAL	HELMET, SAFETY BOOTS  
CRUSHING, STORAGE OF MATERIAL	DUST	P1 MASK, GOGGLES, UNIFORMS
	FALLING MATERIAL	HELMET, SAFETY BOOTS
	NOISE	EAR PROTECTORS > 80db
	LIGHT	PORTABLE LIGHT 24v

<b><u>AREA</u></b>	<b><u>SOURCE</u></b>	<b><u>PPE</u></b>
MILLING AREA	DUST	P1 MASK, GOGGLES, UNIFORMS
	FALLING MATERIAL	HELMET, SAFETY BOOTS
	NOISE	EAR PROTECTORS > 80db
	LIGHT	PORTABLE LIGHT 24v
	HOT MATERIAL	HEAT RESISTING GLOVES
CLINKER PRODUCTION	HOT ENVIRONMENT	<ul style="list-style-type: none"> <li>• HEAT RESISTING OVERALLS 600°C</li> <li>• MASKS FOR PROTECTION AGAINST ULTRAVIOLET RADIATION</li> <li>• HEAT RESISTING GLOVES</li> </ul>
	FALLING MATERIAL	HELMET, SAFETY BOOTS
CEMENT MILLS	DUST	P1 MASK, GOGGLES, UNIFORMS
	FALLING MATERIAL	HELMET, SAFETY BOOTS
	NOISE	EAR PROTECTORS > 80db
	LIGHT	PORTABLE LIGHT 24v
	HOT MATERIAL	HEAT RESISTING GLOVES
<b><u>AREA</u></b>	<b><u>SOURCE</u></b>	<b><u>PPE</u></b>

PACKING AND PREPARATION FOR DELIVERY	DUST	P1 MASK, GOGGLES, UNIFORMS
	FALLING MATERIAL	HELMET, SAFETY BOOTS
	NOISE	EAR PROTECTORS > 80db
	LIGHT	PORTABLE LIGHT 24v
MAINTENANCE	ELECTROCUTION	ΓANTIA 11.000 V
	FALLING MATERIAL	HELMET, SAFETY BOOTS
	DUST	P1 MASK, GOGGLES, UNIFORMS
	HIGH TEMPERATURE	HEAT PROTECTION GLOVES 300 °C
	WELDING	WELDING MASK, WELDING APRON