**SOP FOR**

1. **PURPOSE: Safe working procedure for insulation of all silos in GCP area.**
2. **SCOPE:** **Gas Cleaning Plant.**
3. **RESPONSIBILITY: Engineer In charge and workmen on job.**
4. **PROCEDURE: INSULATION OF GCP.**
5. **REFERENCES: Operation & Maintenance manual.**

**PPEs to be used:**

* Helmet, Safety shoes, Hand gloves, Dust mask, safety harness and safety goggle. (Depending upon type of job)

Aspect & Impact

|  |  |
| --- | --- |
| Scrap generation | Resource Depletion |
| Hazardous waste | Health |

Hazards identified

Mechanical Hazard

1. Fall of person from height
2. Fall of material from height.
3. Fall of chain block from height.
4. Fall of scaffold arrangement etc.
5. Fall of wool particles in eyes while transporting glass wool from ground to the working area.
6. Skidding due to poor housekeeping.
7. Hitting on scaffold due to improper scaffolding arrangement.
8. Trapping in between parts, weights.

**Chemical Hazard**

1. Toxic gases.
2. Co gas poisoning while welding and cutting the silos and gas lines.
3. Fire & Explosion while welding and cutting in poorly ventilated area.

Health Hazard

1. Entering of glass wool into the lungs.
2. Result in temporary itching discomfort.
3. Fall of objects in eyes while transporting materials.

**Electric hazard**

1. Electric shock on equipment
2. Fire due to electrical short circuit in welding machines.

**Behavioral hazard**

1. Workmen under the influence of alcohol.
2. Violation of procedure.
3. Not wearing PPE’s.
4. Casual approach of operator.
5. Not concentrating while operating machine.
6. Horseplay.

**Work :- Insulation and structural works**.

1. Take work permit from production department (Resp: shift Superintendent / Engineer in charge) if the work is related to production.
2. If the job is near gas-affected area, use CO monitor and no presence of CO in the area of working.
3. Electrical shutdown is required should scaffolding is to be carried out in its vicinity of 6 meters of overhead HT/LT lines are.
4. Cordon the area coming under scaffolding.
5. If the insulation/structural job is to be carried out at height above 2 meters proper scaffolding arrangement needs to be made. (Steel Scaffolding is preferred).
6. Keep first horizontal pipe above 2 mtrs to avoid obstruction / hitting on person moving in the vicinity.
7. No person should stand below pipes/planks being lifted or placed at height.
8. Person climbing on top to do scaffolding arrangement must wear full body harness with 2 lanyards and all PPE required for working at height.
9. Assembly/joining of scaffolding pipes to be done with metallic clamps.
10. Each supporting member for scaffolding, stair, and runway shall be placed on firm, rigid smooth foundation that prevents lateral displacement
11. Make sure that bamboos/ pipes used for scaffolding are not protruding in workable area of other workmen or not in dangerous position to hit someone.
12. Scaffolding pipes tied should be maximum 1 meter apart for better stability of scaffolding arrangement and ease of persons mobility.
13. Wooden planks of minimum one-inch thickness or aluminum grating or light steel walkway has to be placed and held firmly by rope or clamp at suitable height for working. The preferred positioning of platform is one meter below the work area.
14. Ensure that the scaffolding and platform made is not obstructing the operations of plant, moving vehicles and safe access of person to inspect the equipment.
15. The full body harness used must have 2 safety rope and hook and hooked to two solid supports above man height.
16. Fall arrestor must be used wherever possible.
17. Fix Safety net wherever feasible.
18. Remove the scaffolding by lowering the pipe with the help of rope.
19. Ensure usage of completely seal safety goggles to avoid dust and particles going in the eye during insulating.
20. Avoid fall of glass wools in atmosphere & direct contact by hand. Use hand gloves and goggles for the same.
21. Use proper masks to avoid the dusts entering into the body.
22. If cutting and welding is to be done near insulation area prior permission of the same has to be obtained from concerned department and wear the black goggles.
23. While working on or near electrical appliance ensures the shutdown of the same. Also do not work near live cables.
24. Use double hook safety belt / harness while working at height.
25. Use proper safety arrangements while lifting the glass wools and insulating plates from the ground floor to the working place.
26. Finish the insulation work in same day when the anchor is welded to the silos to avoid any injury while it will come in contact with the person.
27. Remove the scaffolding by lowering the bamboos/ pipe with the help of rope after finishing the work.
28. Give clearance to the concerned department.
29. Ensure the proper usage of CO detector while working on the gas prone area.
30. Clean the working area and remove the glass wools after the work is completed to avoid the mixing the wools to the atmosphere.

**DO**

1. Use masks, hand gloves and goggles while insulation work is under progress.
2. Use only certified welder for the welding and cutting operation.
3. Use Safety belt/Full body hardness while working at height.
4. Inspect scaffolding at periodic interval.
5. Use CO monitor while working.

**DO NOT**

1. Leave make scaffolding arrangement such that it will hit the person.
2. Loose fitting of glass wool and plates while lifting from ground to working place.
3. Do not gas cut and weld the silos and gas linesas it may explode.

# Safety Information:

As per the safety measures, inhalation of glass wools with skin and eyes should be avoided. Use proper PPE’s while doing insulation work.

Working near the electric line to be done under complete close supervision and only after suitable authorization for the job by area engineer both Electrical and mechanical.