**1.0 Purpose : -** Maintenance of hearth layer bin

2.0 **Scope**: Sinter plant

3.0 **Responsibility** : Engineer In charge and workmen on the job

4.0 **Procedure** : **Hearth layer bin liner replacement**

***Identified Hazards:***

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| --- | --- | --- |
| **Energy Sources** | **Potential hazards** | **Consequences** |
| Electrical | * Electrical & Instrumentation cables | * Burn injuries * Electrical shock in welding |
| Kinetic | NA |  |
| Mechanical | * In haling of dust * Failure of sling, chain pulley block * Fall of people * Fall of material | * Fractures |
| Potential | * Water on the floor * All steady structures | * Slip & trip while climb * Trip & fall over chute |
| Thermal | * Heat from the bin | * Burn Injuries |
| Chemical | * Lubricants * Water * Co gas | * Slip & fall * Water borne disease * Suffocation |
| Radiation | * NA |  |
| Biological | * Mosquitoes * Birds | * Birds attack * Mosquito bites |
| Bio mechanical | * Body posture of worker entering the bin. | * Body Pains * Fractures * Disabilities |

**FOR MORE DETAILS REFER CENTRALISED CONFINED SPACE ENTRY SOP-VL/IMS/VAB/SP44 Y**

***Human Hazards:***

1. *Non adherence to WI*
2. *Nonuse of PPE*

***DO’S***

1. *Dust generation.*
2. *Inside heat of bin.*
3. *Use PPE’s.*
4. *Follow SOP.*
5. *Activity to be carried out during day duty hours.*
6. *New work permit to be taken after every 8 hrs.*
7. *For working in night prior approval should be taken from Head Operations*
8. *Unauthorized operation or repair of any equipment is a punishable offence.*
9. *Before putting Entrant (Fitter/welder/Rigger) on job attendant must ensure that Entrant (Fitter/welder/Rigger) should familiar with the operation and maintenance.*
10. *Before entering into duct ensure that shutdown of Sinter machine and PD3 Conveyor is taken.*
11. *Before entering into duct ensure about non availability of CO presence.*
12. *Check the certified ladle for its looseness, to avoid falling of person.*

***DONT’S***

1. *Do not by pass SOP.*
2. *Don’t enter in bin in presence of CO.*
3. *Don’t enter in bin if temp is high.*

## Work No 1  :  Replacement of hearth layer bin liner replacement.

1. *Before Entering in to bin ensure –*
2. *Take electrical shutdown of PD3 Conveyor and sinter machine.*
3. If more than one worker is relying on the protection of an isolation, then all workers should apply their own locks in master lock out box
4. Press local push emergency button of the Sinter machine.
5. *Hearth bin inside temperature should be less than 45 degree Celsius.*
6. *CO Level should be 0 ppm*
7. *Attendant must ensure proper illumination, if illumination not found ok, he must inform concern electrical person to provide hand lamp/Torch (24v).*
8. *Take the work permit from HOD, Safety for entering bin.*
9. *The workmen (Entrant) who is trained and certified by SUB head and having valid confined space gate pass should perform the activity and he can be replaced(in emergency) only by certified entrant .*
10. *A standby (attendant) who is trained and certified by SUB head and having valid confined space gate pass should perform the activity and he can be replaced(in emergency) only by certified attendant .*
11. *Standby person who shall be positioned outside the confined space , must have no other duties other than monitoring people and conditions inside the confined space and coordinating with rescue personnel (he must have contact number of rescue team members) if required.*
12. *Standby (Attendant) person has to log down the entry details of all Entrants.*
13. *Check of Internal atmosphere of the space for sufficient oxygen content (19.5% to 23 %) flammable gases and vapors, and the potential for toxic air contaminants before entering into main flue duct. If there is any deviation please do not enter into main flue duct.*
14. *Check for the presence of Chemical asphyxiates such as Carbon monoxide (CO gas detector).It should be 0 PPM*
15. *Check inside temperature and it should be is in the tolerable range (25 deg C to 45 Deg C). If the temperature is not within limits then appropriate ventilation to be used.*
16. *Check for suitability of equipment that is used at the confined space.*
17. *Check any dust due to which visibility is reduced or respiratory tract is irritated.*
18. *The sign-in and sign-out of all persons entering into main duct should be recorded.*
19. *Use 24V DC supply illumination to avoid electrocution/electric shock.*
20. *Remove the hood of PD3 Conveyor.*
21. *Cut and removed the bin top plate and place the certified ladle and lifeline.*
22. *If everything normal as per confined space SOP enter the bin.*
23. *Temporary platform to be erect if required.*
24. *Cut and removed the old liner plate by gas cut.*
25. *Fix the new liner plate and bolted it also tag weld to be done*
26. *Remove the temporary platform and fix the bin top plate.*
27. *Ensure that proper housekeeping is done inside the bin and box up the PD3 hood.*
28. *Normalize the system and release all equipment shutdowns and close the work permit.*
29. *Give the clearance to HOD, SS from your side that your assigned job is completed.*

*Please note that this area is considered as Confined Space so needs to maintain the checklist of the activity. All in time and out time details of entrants, levels of gases to be logged in checklist (yellow copy) or in any alternate document and to be documented.*

***Role of Rescue Team***

***As the work is being carried out inside hearth bin, in an emergency victim can be taken out by use of rescue apparatus such as stretcher. However attendant should call ambulance which is fully equipped. However rescue team members should take a charge of the situation.***

**Amendement Record**

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| --- | --- | --- | --- |
| **Date** | **Manual Section Ref. & Para** | **Brief details of Revision** | **New Rev.** |
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| **Prepared By:**  Associate Manager- Sinter Plant Mechanical | **Reviewed & Issued By:**  Management Representative | **Approved By:**  **Manager- Mechanical PID2** |
| **Signature:** | **Signature:** | **Signature:** |
| **Review Date: 22.03.2022** | **Review Date: 22.03.2022** | **Review Date: 22.03.2022** |