



MECHANICAL SOP

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| Issue No. 01 | Rev. No: 0 | Effective Date: 20.07.2019 | SOP/MEC/000 |
| Issued By: M.R | | Approved By: HOD Mechanical | |
| SOP FOR CARRYING OUT HOT WORK IN FLAMMABLE MATERIAL AREA | | | |

Scope: Hot work jobs (Welding, Gouging, gas cutting and Grinding) in flammable material area

Responsibility: Fitter/ Welder/ Supervisor

Accountability: Mechanical-Section Engineer / Section Head

PPE:

1. Safety helmet.
2. Safety shoe.
3. Nose Mask.
4. Hand Gloves.
5. Goggles.
6. Leather apron.
7. Welding Helmet

TOOLS:

1. Welding shield
2. Welding machine
3. Gas cutting set
4. Fire blanket
5. Fire extinguisher
6. Grinding machine
7. Chipping hammer
8. Wire Brush

Hazard Analysis:

Risks associated:

Mitigating Measures

Ignition of flammable material : Clean the flammable material

- : Keep fire extinguisher near by (applicable as per nature of flammable material)
- : Check the fire hydrant availability (usage as per nature of flammable material)

Molten slag from Hot work : Use of suitable guards and aprons

Sparks from Hot work : Use of suitable guards and aprons



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| Fall of object: | : Use of proper lifting tools |
| Fumes generation | : Ventilate the area |
| UV rays | : Use proper goggles |
| Slip of tools | : Use appropriate tools |
| Electric shock | : Use appropriate gloves & machine Earth system |

SOP FOR CARRYING OUT HOT WORK IN FLAMMABLE AREA

1. Prepare hot work permit after investigating the work place and surrounding area .
2. Ensure fire hydrant availability / fire extinguishers in work location.
3. Assess the nature of flammable material surrounded by the place and Check the suitability of fire extinguisher type / hydrant line as per nature of flammable material.
4. Check the water availability with pressure and flow from fire hydrant line.
5. Keep the fire extinguisher nearby the flammable material.
6. Evaluate the accessibility of evacuation and fire mitigation of working area
7. Check the hot work tools like welding machines, gas cutting set and grinding machine thoroughly with all necessary safety / protective tools.
8. Wear all necessary PPEs to carry out the hot work.
9. Route the welding cables, power cables and gas cutting set hoses separately.
10. If flammable material can not be moved to a safe distance , Check the possibility of doing hot work after isolating the parts or area of job.



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11. If neither flammable material nor the hot work can be moved a safe distance from one another, then the flammable material should be covered tight fitting , flame resistant material with no gap to prevent ignition.

12. Clean and wash all the flammable material completely.

13. Check the cracks, pipe holes and other small openings as flying sparks and molten metal can lodge in small openings and material may smolder unseen for hours.

14. Appoint a fire watcher where hot work is being carried out in area with considerable flammable materials.

15. Start the hot work after completion of all above activities.

16. Inspect the area continuously where molten slags or sparks to reach finally to settle down.

17. Remove the slags / ignited material immediately upon continuous observation.

18. After finishing the hot work, Fire watcher or any other responsible persons to be allotted to monitor the area up to 12 hours.

Emergency / Emergency Shut OFF:

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

Records/Annexure:

1. JSA as enclosed below

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|---|---------------------------------|------------------------|-------------------------------|-----------------------------|
| Job Safety Analysis | Job: Hot work in flammable area | Date: 20/07/2019 | Analysis by: Section Engineer | Reviewed by: Section Head |
| Title of employee doing job: Hot work includes welding, gouging, cutting & grinding | Supervisor: Section Engineer | Department: Mechanical | Section: All - Mechanical | Approved by: HOD Mechanical |



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Req'd/recommended PPE:

| Sequence of Basic Job Steps | Potential Hazards | Recommended Safe Job Procedure | What Could Go Wrong | Corrective Action |
|---|------------------------------|--|---|--|
| Welding and gouging | Burn injury | Keep the hand and body out from the place of material falling | While welding, slags and sparks may fall on hand and body | Use apron, sleeves and necessary additional guards to prevent falling on person. |
| Gas cutting | Burn injury | Keep the hand and body out from the place of material falling | While doing the gas cutting, sparks and molten metals may fall on body | Use |
| Grinding | Hand Injury | Check the expiry date of grinding and cutting wheels before usage | Wheel may cut and hit the body parts | Ensure proper fixing of protection guard on machine |
| All hot work (Welding, Gouging, Gas cutting and Grinding) | Severe burn injury | Clean the flammable material completely and Ensure no flammable material get ignited due to hot work | Sparks and Molten metals may reach to flammable material and cause fire | Keep the non flammable guards with no gap |
| Removing of chips | Body injury | Use of all PPE and necessary additional guards to prevent ignition | While removing slags, chipping hammer slip. | Use Correct type of tools and hammers. |
| Using the Welding machine | Hand injury (electric Shock) | Use appropriate tools | While Welding the job ,secondary earth not connected properly | Check the earth connection before doing the welding |



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