

# **Welding, Cutting and Hot Work Program**



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## **SCOPE**

The purpose of this program is to develop methods, and preventive strategies to avoid hazardous situations during “**Hot Work Operations**”.

Hot work requires everyone involved taking extra precautions. Even in hot work operations that are considered routine, employees must always follow established safety procedures from the beginning of the job to the end.

## **DEFINITIONS**

<b>Arc Welding:</b>	A process for joining metals by heating with an electric arc with or without the use of pressure and with or without filler material.
<b>Brazing:</b>	A process of joining metals without melting them with filler metal melting above 800 degrees.
<b>Combustible:</b>	Means a material or liquid that between 100 – 200 degrees will catch on fire without the need of an ignition source.
<b>Cutting:</b>	A process in which the severing or removing of metal is affected by the use of an arc or flame.
<b>Flammable:</b>	A solid or liquid capable of being easily ignited and burns with extreme rapidity.
<b>Gas Welding:</b>	A process for joining metals by heating with a gas flame with or without the use of pressure and with or without filler material.
<b>Soldering:</b>	A process of joining metals without melting them using a filler metal melting at 800 degrees, or below.

## **RESPONSIBILITIES**

The **Job Foreman** will appoint a qualified employee to monitor and supervise the use of all portable cutting, welding, and other hot work equipment.

The employee (s) **Job Foreman** assigning the hot work will ensure that a “**Hot Work Permit**” (See Attachment #1, Hot Work Permit) is completed. The Job Foreman will also inspect and approve the area to assure the identification and removal of all hazards.

Each **Employee** assigned hot work will utilize the required personal protective equipment and make sure that all sections of the “Hot Work Permit” have been completely filled out and approved.

The Shop Foreman contracting outside services to do work on site will make sure that all **Contract Employees** follow this procedure each time hot work is to be done. Contract employees may follow their own procedure if R.W. LaPine, Inc. Company approves it and if it is equal to or better than R.W. LaPine, Inc. Company’s Hot Work Procedures.

**Equipment Operators** must report equipment defects and discontinue use until it has been repaired or replaced. Operators of equipment should report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs shall be made only by qualified personnel.

## **TRAINING and EDUCATION**

The Job Foreman of the employees assigned to perform hot work is to ensure that assigned employees are competent and follow the hot work permit procedure. Prior to performing any hot work, each employee must also be trained in filling out the “Hot Work Permit”, safety precautions to be taken and the necessary posting requirements. This training should be documented.

Training will be done in the use of fire extinguishing equipment for employees assigned to fire watch. Assigned fire watchers will be trained in the use of fire extinguishing equipment and familiar with the facilities for sounding an alarm in the event of a fire.

## **RECORD RETENTION**

Upon the completion of any hot work, all permits must be returned to the authorizing Job Foreman, who will forward the permit to R.W. LaPine, Inc. Company’s Office Manager. These permits will be retained for one year to allow for periodic review and audits.

## **GENERAL RULES**

All cutting and welding shall be done in designated areas free of flammables or conditions favorable to fire or explosion.

If it is not practical to perform work in designated areas on equipment, **Hot Work** procedures shall be followed.

## **FIRE PREVENTION and PROTECTION**

**Fire Hazards:** If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

**Guards:** If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, to protect the immovable fire hazards.

**Restriction:** If the fire hazard is not moved or guarded as explained above, welding and cutting shall not be performed.

**Combustible Material:** Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks, which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

**Fire Extinguishers:** Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

**Fire Watch:** Fire watchers shall be required whenever welding or cutting is performed in locations where a fire could start or one of the following conditions exists.

1. If there is a possibility that a smoldering fire may have started keep an observer at the scene of the work for at least 30 minutes after welding or cutting as stopped.

NOTE: The fire watch observer may be an employee working in that area.

2. If there is an appreciable amount of combustible material within 35 feet of the point of operation, which could not be moved.

**FIRE WATCH, (Continued)**

3. Appreciable combustible material more than 35 feet away, however, easily ignited by spark.
4. Wall or floor openings less than a 35 feet radius from exposed combustible materials in adjacent areas including concealed spaces in walls and floors.
5. Combustible material adjacent to the operation side of a metal partition, wall, Ceiling, or roof, which is likely to ignite by conduction or radiation.

**Floors:** Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet. Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

**PERMIT SYSTEM**

A hot work permit will be required for any operations where an ignition source is used such as an open flame, heat or sparks, outside a designated welding/Cutting area. Types of operations may include, **brazing, cutting, grinding, soldering, sweating pipe, or use of a torch.**

The following precautionary actions shall be taken:

1. Move all flammables a minimum of 35 feet from the work area.
2. Make sure there is no explosive atmosphere present.
3. Sweep floors of dust and residues.
4. Wet down wooden or combustible floors, or cover with damp sand or fire resistant sheets.
5. Cover cracks in the floor or walls that are within 35 feet of the work area if they could pass sparks to other areas.
6. Have appropriate portable fire extinguishers on hand.
7. Ducts, conveyors and exhaust systems that might carry sparks to a distant combustible shall be protected or shut down.

**CONDITIONS PERMITS UN-AUTHORIZED**

1. In an area not authorized by the Job Foreman.
2. When any fire suppression equipment is not functioning or turned off, unless a fire watch observer is provided.
3. In the presence of an explosive atmosphere such as mixtures of flammable gases, vapors, liquids, or dust within the air.
4. In an areas nearer than 35 feet of storage of readily ignitable materials.

**SAFE HOT WORK PRACTICES**

**Used Containers:** No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipelines or connections to the drum or vessel shall be disconnected or blanked.

**Metal Splatter:** Be aware of metal splatter. Make sure it does not go into employee occupied areas. That it does not fall into unsafe areas were it could cause a fire.

**Ventilation:** Make sure the work area is adequately ventilated.

**Confined Spaces:** When **arc welding** is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine are disconnected from the power source.

**Torch Valve:** In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside of the confined space whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable the torch and hose shall also be removed from the confined space.

**Special Notes:** When finished welding or cutting, warn other employees of hot metal by marking or putting up a sign. Keep floors clean by putting electrodes or rod stubs in a proper receptacle. Keep floors clear of trip hazards by storing tools in a safe area.

**ATTACHMENT #1**

**HOT WORK PERMIT**



A Hot Work Permit must be obtained before any Cutting, Welding, other Spark or Heat producing Operation is initiated outside of designated welding Area.

- |  |       |       |       |
|--|-------|-------|-------|
| A. Cutting/Welding<br>Equipment in good  |       |       |       |
| B. Housekeeping: Floors<br>swept, debris cleaned up.                               | _____ | _____ | _____ |
| C. Flammable materials<br>removed from area.                                       | _____ | _____ | _____ |
| D. Sparks are contained by<br>Walls, tarps, or other<br>Barriers.                  | _____ | _____ | _____ |
| E. Drains/trenches covered.  | _____ | _____ | _____ |
| F. Has area been tested for<br>Explosive atmosphere.                               | _____ | _____ | _____ |
| G. Exposures to adjacent<br>Areas & Production<br>Processes have been<br>Reviewed. | _____ | _____ | _____ |
| H. Fire Watch.   | _____ | _____ | _____ |
| I. Extinguishers & other<br>Fire equipment available.                              | _____ | _____ | _____ |