

Brieser
CONSTRUCTION

Section 23
Safety Health
and
Environmental
Manual

2023

Hot Work

BRIESER CONSTRUCTION GENERAL CONTRACTORS		Developed:	2/16/2005
		Revised:	10/13/2016
CORPORATE SAFETY, HEALTH & ENVIRONMENTAL MANUAL		Revision:	08
		Reviewed:	01/2023
STANDARD OPERATING PROCEDURE:		HOT Work	
CROSS REFERENCE:	29 CFR 1926.Subpart J Welding & Cutting 29 CFR 1926.303 29 Abrasive wheels and tools NFPA 51B: Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, 2003 Edition		

PURPOSE

This procedure provides guidance for a safe operation of welding and cutting equipment and defines the minimum requirements for conducting welding, cutting, grinding, electrical tool operation and other types of hot work.

SCOPE

This procedure applies to all Brieser construction and maintenance projects where the host facility does not have an adequate Hot Work Procedure and a potentially hazardous atmosphere or restricted location may exist. If host facility deems an area a free burn zone or the like a Brieser Hot Work Permit must be filled out in this instance. Hot Work shall not be performed until a Hot Work Permit is obtained from our customer/host/facility/client. If a customer Hot Work Permit is being used, it shall be compared to this policies Hot Work Permit and verified that all sections are as stringent as or more stringent than this policy.

DEFINITIONS

- **Hot Work**
 - Any activity within a hazardous or restricted area which Could potentially produce a spark or ignition source.
 - Involves a hot surface.
 - Involves an open flame.

- **Hazardous or Restricted Location**
 - These are areas where flammable, combustible or explosive materials or atmospheres are present or may become present and significant fire and/or explosion could occur if ignition sources are introduced.
 - Typically, a restricted area is designated Class I or Class II Electrical area.

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DEFINITIONS continued

- **Fuel Gases**
 - *Acetylene* – Acetylene is an unstable gas when compressed above 15-*psig*. Cylinders must be stored in an upright position with caps on.
 - *MAPP Gas* – MAPP is a stabilized mixture of methyl acetylene with considerably less tendency to backfire. Maximum allowable pressure is 94-*psig* versus 15-*psig* for Acetylene. Cylinders must be secured and stored in an upright position with caps on.

- **Industrial Gases**
 - *Oxygen* - Oxygen itself is not flammable, but the presence of oxygen accelerates the combustion reaction. Oil and grease, in the presence of oxygen, become highly explosive. Oxygen must not be allowed to contact petroleum-based substances. Cylinders must be secured and stored in an upright position with caps on.

REQUIREMENTS AND RESPONSIBILITIES

All employees performing hot work must comply with the following written program:

- Hot work shall only be performed after the work and area has been reviewed and approved by an authorized person and a hot work permit issued.
- In areas where a flammable or explosive atmosphere may be present, Hot Work shall only be performed after the area where work is to be performed has been checked with a combustible gas monitoring instrument (Lower Explosive Level or LEL-meter) and a reading of 0% LEL has been obtained.

The work area MUST be continuously monitored by a 4 gas (oxygen, CO, H2S, LEL) instrument for the entire duration of the HOT work.

- A copy of the hot work permit shall be always posted at the operation.
- A new permit must be obtained:
 - If work area conditions change.
 - Permits are valid for a maximum of 30 days. Regardless of conditions

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GUIDE FOR WELDING AND CUTTING

Setting Up Equipment

- Prior to operating gas cutting equipment all employees must be trained & knowledgeable in the Gas Cutting Torch Safety Information in the Brieser Construction Company Training Manual. Appropriate safety procedures must be reviewed and understood prior to use of this equipment.
- 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.
- Momentarily open and close (called cracking) the manifold or cylinder valves before attaching hoses or regulators. This dislodges any loose contaminant that is present.
- Release the regulator adjusting screw before opening the manifold or cylinder valve.
- Open valves slowly. Don't stand in front of the regulator when opening the valve.
- When using fuel gas do not exceed 15-psig on torch side gauge. Reverse flow check valves must be at the regulator end of both fuel and oxygen hoses. It is strongly recommended that they also be used at the torch end of the lines.
- Purge your fuel-gas and oxygen lines.
- Always light the fuel gas before opening the oxygen line.
- Never use oil or grease around fuel gas/oxygen line.
 - Never use oxygen as a substitute for compressed air.
 - Keep heat, flames, and sparks away from hoses, regulators, tanks, and combustibles.
 - Make sure all hose, cylinder, and regulator attachments are tight and not leaking.
 - Cylinders must be secured and stored in an upright position with caps on when not in use. Oxygen cylinders in storage shall be separated from fuel gas cylinders or combustible materials a minimum distance of 20' or by a noncombustible barrier at least 5' high having a fire resistance rating of at least one-half hour.
 - Cylinders containing oxygen or acetylene, or other fuel gas shall not be taken into confined spaces
 - The employee must close the valve on all cylinders and remove hoses and torches from a confined space when work is not being performed

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Setting Up Equipment continued

- Safety Considerations
 - Never begin any welding or cutting without the proper permits.
 - Always check to see that you have appropriate fire protection equipment immediately available before doing any welding or cutting or hot work.
 - A fire watch must be present during the entire welding or cutting or hot work and stay in area for a minimum of 30 minutes after welding or cutting or hot work has stopped
 - Welders must not wear synthetic or disposable-type clothing.
 - Welders must wear appropriate PPE which may include appropriate helmet or goggles with correct shaded lens, welder's gloves and welder's coat. Refer to the Brieser Construction Training Manual for specific filter lens requirements. Job site conditions may warrant additional PPE. PPE matrix is also available as an aid during Hot Work operations
 - Never take short cuts. Follow procedures as outlined

- Health Considerations
 - Always obtain a Safety Data Sheet for the material you are welding or cutting on.
 - Specific hazards to look out for during hot work activities
 - Never weld, cut, grind or essentially disturb materials that have lead based paint on them
 - Never weld, cut, grind, or essentially disturb materials that have Cadmium coatings. Cadmium is frequently used as a rust-inhibitive agent on steel but can be an alloy as well.
 - Never weld, cut, grind, or essentially disturb materials that contain zinc. Galvanized metal as well as brass are top candidates for this metal in our industry.

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ELECTRICAL SHOCK HAZARD

- Almost all electrical currents present some degree of potential shock hazard.
 - Open circuit voltages should not exceed 100 volts DC or 80 volts AC
 - Welding units that are powered by A.C. must be adequately grounded, and to change the polarity, the unit must be shut down
 - GFCI's (Ground Fault Circuit Interrupters) cannot be used on welding machines with DC current.
 - Grinding, cutting or portable electrical equipment must be double insulated or use GFCI's.

INERT AND TOXIC GAS EXPOSURE

- Many welding procedures require an inert gas, such as argon and/or helium. These gases present an asphyxiation hazard.
- Large diameter pipe will contain large volumes of inert gas and a greater potential for asphyxiation.
- Temporary enclosures over field installations should be checked for oxygen level before use and monitored continuously when in use. A confined space entry permit may be required in these situations.
- Argon will register "hot" when checked using an explosion meter but will measure correctly when using an oxygen meter.

TRAINING

- Assigned fire watchers must be trained in the use of fire extinguishing equipment and familiar with the facilities for sounding an alarm in the event of a fire.
- Individuals performing welding/cutting must be suitably trained in the safe operations of their equipment and the safe use of the process. Refer to the Brieser Equipment Training Manual

A Hot Work Permit must be issued prior to any Hot Work being conducted on Brieser property or at a jobsite by any person, employee, or contractor. Hot work is any operation that generates heat, spark or open flame. This includes, but is not necessarily limited to welding, cutting, brazing, grinding, soldering, heat gun use and similar activities.

Before initiating Hot Work, determine if there is a safer way to complete the work.

Permit Valid From Date: _____ Time: _____ To Date: _____ Time: _____

Location Description: _____

Type of Hot Work: Soldering Welding Cutting Grinding Other _____

Hot Work Precautions Check List: Complete prior to any hot work beginning in any area, including outdoors. Check each box where the statement is true. If any statements are not true, then hot work should not begin until that issue has been safely resolved.

Required Safety Precautions:

- Fire suppression sprinklers, fire hoses or fire extinguishers (minimum 2-A: 20-B: C) rating is available and operable.
- Hot work equipment is operable and in good repair.
- Smoke/fire detectors in the immediate area of the hot work have been temporarily disabled until the hot work is complete.
- Building occupants have been protected or isolated from the hot work area.
- Drums, barrels, pipes and tanks have been cleaned and purged of flammables and toxics, all tank feeds are closed, and the tank is vented.
- Work area is NOT a Confined Space. (See definition in policy.)

<p>Post This Permit Near Worksite</p> <p>In case of FIRE call _____</p> <p style="text-align: right;">Fill in emergency #</p> <p>No Hot Work in Confined Spaces without prior approval from Brieser Safety. Supervisors shall keep completed permit for at least 48 hours after permit has expired.</p>
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Requirements within 35 feet when flame, sparks or slag are created:

- Area within 35 feet of the work area has been properly swept to remove any combustible debris.
- Flammable and ignitable materials and debris have been moved at least 35 feet from the hot work area or covered and protected with fire resistant materials.
- Cracks or holes in floors, walls and ceilings (including ductwork) are covered or plugged.
- Combustible floors wet down, covered with damp sand or fire-resistant sheets.
- Fire-resistant tarpaulins suspended beneath elevated hot work.

Requirements within 50 feet when flame, sparks, or slag are created:

- Explosives, compressed gas cylinders or stored fuel have been moved at least 50 feet from the hot work area or have been protected from the hot work.

Work on walls or ceilings:

- Construction is noncombustible and has no combustible covering or insulation.
- Areas adjacent to walls being worked on are checked for combustibles and any combustibles are either removed or protected.

Fire Watch required during Hot Work and a minimum of 30 minutes following completion of work.

Yes _____ No _____ Name: _____

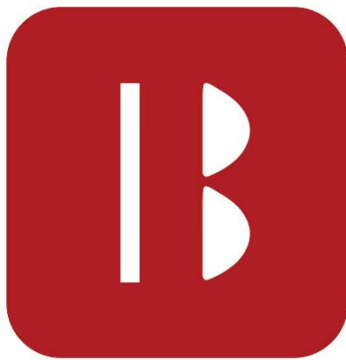
A Fire Watch is needed for all Hot Work activities unless the Hot Work area has no fire hazards or combustible exposures. The Fire Watch must have fire extinguishing equipment readily available and be trained in its use. The Fire Watch must also be familiar with the procedures for sounding an alarm in the event of a fire. The Fire Watch will watch for fires in the exposed areas and is responsible for extinguishing spot fires and communicating alarms immediately.

When work is completed, and area is returned to its original condition (Initials):

_____ Inspected work area, and any potentially affected surrounding areas, for fire, fire damage, or potential for fire.

I verify that the above location has been examined and the necessary precautions have been taken to prevent the outbreak of fire due to Hot Work.

Employee or Contractor Signature: _____ Date: _____ Time: _____
Trained Supervisor or EHS Signature: _____ Date: _____ Time: _____



Brieser

CONSTRUCTION

**BRIESER CONSTRUCTION
SAFETY & HEALTH MANUAL
SECTION 23
HOT WORK
SUB-SECTION
TRAINING**

EMPLOYEE TRAINING CERTIFICATION & ACKNOWLEDGMENT
Brieser Construction

Date: _____ Location: _____

Trainer's Name and Title: _____

Trainer Qualifications: _____

Length of Training: Hours/Minutes Time: AM/PM TO: AM/PM

Purpose of Training (check one):

_____ Section 23 Hot Work Training

TITLE: Hot Work

Note: Please consult Section 23 Hot Work in Brieser Safety Manual

Discussed and/or Viewed:

- Brieser Construction Manual Section 23 Hot Work Safety & Permits
- 29 CFR 1910.252-Welding, Cutting & Brazing
- 29 CFR 1926.303 29 Abrasive wheels and tools
- NFPA 51B: Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, 2003 Edition

ROUTING	PERSONNEL MANAGER	Add to Training Database
	SCAN	SAFETY/HOT WORK TRAINING/MMDDYY TRAINING CERTIFICATION

Signature of Instructor _____ Employee
Signature _____

Please Note: If more than one employee is being trained use Attendance Roster pg. 11 Sect. 23 Hot Work

ATTENDANCE ROSTER

Brieser Construction

By my signature below, I acknowledge that have I received and understand this training.

EMPLOYEE NAME (Print or Type)	EMPLOYEE SIGNATURE	TRADE	JOB TITLE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
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9.			
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11.			
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13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

ROUTING	PERSONNEL MANAGER	Add to Training Database
	SCAN	SAFETY/HOT WORK TRAINING/MMDDYY TRAINING CERTIFICATION

Score: _____ %

Employees Name:	_____	Date:	_____
Company:	_____	Instructor:	_____
Emp #:	_____	Job Title:	_____

Answer the following questions “True” or “False” by circling the appropriate letter.

- T** **F** 1. A host company deems an area a free burn zone or the like, must a Brieser Hot Work Permit be filled out for this instance?
- T** **F** 2. Hot Work shall not be performed until a Hot Work Permit is obtained from our customer/host/facility/client. If a customer Hot Work Permit is being used, it shall be compared to this (Brieser’s) policies Hot Work Permit and verified that all sections are as stringent as or more stringent than this (Brieser’s) policy.
- T** **F** 3. In areas where a flammable or explosive atmosphere may be present, Hot Work shall only be performed after the area where work is to be performed has been checked with a combustible gas monitoring instrument (L.E.L. meter) and a reading of 0% L.E.L. has been obtained.
4. Momentarily opening and closing the manifold or cylinder valves before attaching hoses or regulators that dislodges any loose contaminant that may be present is called _____.
5. Cylinders must be secured and stored in an upright position with caps on when not in use. Oxygen cylinders in storage shall be separated from the fuel gas cylinders or combustible materials a minimum distance of ___ feet or by a noncombustible barrier at least ___ feet high having a fire resistance rating of at least one-half hour.
- T** **F** 6. Cylinders containing oxygen or acetylene, or other fuel gases shall not be taken into confined spaces.
- T** **F** 7. A Fire Watch be present during the entire welding, cutting or hot work and stay a minimum of 30 minutes after welding, cutting or hot work has stopped.
- T** **F** 8. Never weld, cut, grind or essentially disturb materials that have Lead based paint on them.
- T** **F** 9. Never weld, cut, grind or essentially disturb materials that have Cadmium coatings. Cadmium is frequently used as a rust-inhibitive agent on steel but can be an alloy as well.
- T** **F** 10. Never weld, cut, grind or essentially disturb materials contain zinc. Galvanized metal as well as brass are top candidates for this metal in our industry.

Answers

- | | | |
|---|---|---|
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| | | 4. Momentarily opening and closing the manifold or cylinder valves before attaching hoses or regulators that dislodges any loose contaminant that may be present is called <u>Cracking</u> . |
| | | 5. Cylinders must be secured and stored in an upright position with caps on when not in use. Oxygen cylinders in storage shall be separated from the fuel gas cylinders or combustible materials a minimum distance of <u>20’</u> feet or by a noncombustible barrier at least <u>5’</u> feet high having a fire resistance rating of at least one-half hour. |
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