



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT  
ARIYALUR  
SAFETY DEPARTMENT MANUAL**

|   |             |                            |                    |
|---|-------------|----------------------------|--------------------|
| Issue No. 02  | Rev. No: 00 | Effective Date: 01.11.2019 | WI-13(PI-14; AM-8) |
| Issued By: M.R  |             | Approved By: HOD -SAFETY   |                    |
| WORK INSTRUICTION FOR SAFETY PRECAUTIONS ( WELDING & CUTTING) |             |                            |                    |

## **1.0 ARC WELDING**

### **1.1. DO's**

- 1.1.0 Use correct goggles, and shields or helmet, with shields
- 1.1.1 Use correct grade of filter glass for the job.
- 1.1.2 Wear adequate protective clothing.
- 1.1.3 Protect the eyes with goggles or by other means when deslagging.
- 1.1.4 Make sure that the earthing and insulation of ARC welding equipment is satisfactory.
- 1.1.5 Make sure that the ventilation is adequate.
- 1.1.6 Respect the warning notices. They are for your guidance and safety.
- 1.1.7 Always keep the welding leads clear of ladders, passage ways and doors. Keep the cables clear  
of places where truck could run over them.
- 1.1.8 Repair or replace the defective cable immediately. Use only insulated cable connectors.
- 1.1.9 Keep the welding cable free from oil and grease.
- 1.1.10 Disconnect the switch on the power supply whenever Arc welding machines are left unattended.
- 1.1.11 Remove partially used electrode from the holders when not in operation.
- 1.1.12 Keep the holder in a place specifically provided for it(when it is not in use) so that it will not come in contact with men and materials.
- 1.1.13 Always keep the body insulated from the work.

### **1.2 DON'Ts**

- 1.2.0 Do not take risks
- 1.2.1 Do not weld near inflammable material.
- 1.2.2 Do not attempt to repair a tank or other vessel that has held a combustible material until proper precautions are taken to ensure safety.



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- 1.2.3 Do not weld a material cleaned with trichloroethylene until it is absolutely dry.
- 1.2.4 Do not use an engine driven generator in a closed/confined building unless the exhaust gases are lead outside.
- 1.2.5 Do not weld galvanized or other coated metals without taking correct precautions.
- 1.2.6 Do not use a compressed gas cylinder as work support.
- 1.2.7 Do not recharge an acetylene generator with used carbide.
- 1.2.8 Do not check the gas leak with a match flame.
- 1.2.9 Do not smoke in the generator house.
- 1.2.10 Do not allow a power cable to become entangled with the welding cable or to be near enough to the welding operations to prevent the insulation getting damaged by sparks or hot metal.
- 1.2.11 Do not cool the welding electrodes by dipping it in water. Though open circuit voltages are low, they are capable of giving sever shock.
- 1.2.12 Do not weld unless all electrical connections, power supply, welding leads holder and ground clamps are secure and welding machine frame is well grounded.
- 1.2.13 Do not carry ARC welded cable coiled around shoulders when the Conductor is carrying power.
- 1.2.14 Do not strike the ARC until the face has been shielded

**1.3 OXYGEN, BMCG CUTTING AND WELDING:**

- 1.3.0 **DOs:**
- 1.3.1 When plane cutting equipment arrives, always check the same carefully, give special attention for cuts, loose connections and clip fastenings.
- 1.3.2 Keep the cylinder caps screwed on while cylinders are not in use.
- 1.3.3 Keep the cylinders as distant as possible from the work point when cutting is being done.



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- 1.3.4 Keep the cylinder away from open fires, lights, sun rays and excessive heat.
- 1.3.5 Always use pressure gauges for both Oxygen and Acetylene cylinder recommended by the torch manufacturer.
- 1.3.6 Always use a spark lighter to light the torch.
- 1.3.7 Always use a Flash Back Arrestor at the torch end so that in case of back-fire, the fire will not travel towards the cylinder.
- 1.3.8 Keep the cylinder free from oil, grease and tar.
- 1.3.9 Keep cylinders always vertical (especially Acetylene) and tie them securely so that they cannot be knocked down easily.
- 1.3.10 Always use a cradle while lifting the cylinders.
- 1.3.11 Always wear goggles while cutting and welding.
- 1.3.12 Always shut off the valves before changing the torches, regulators, hoses etc.
- 1.3.13 Test for leaks at worn out places and loose connections by immersing the hose in water  
Under Normal pressure
- 1.3.14 Before permitting welding or cutting of tanks which have contained gasoline or other highly volatile liquids or gas, it should be thoroughly purged for 48 hrs with steam.If it is not possible with steam, purge it with air for 48 hrs and it must be checked by a gas detector to find out any possibilities of explosive mixture.
- 1.4 DON'Ts
  - 1.4.1 Never use a defective torch or hose for cutting or welding.
  - 1.4.2 Do not use matches to light the torch. Use a friction lighter or pilot flame.
  - 1.4.3 Do not use the hose on which a flash-back has occurred. At flash-back renders a piece of hose unsafe because it burns the inner wall.
  - 1.4.4 Do not put down the torch until the gas has been completely shut.



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- 1.4.5 Do not hand the torches to the regulators or to other equipment prevent contact with the gas cylinder.
- 1.4.6 Do not allow to use the oil saturated gloves which handling cylinders.
- 1.4.7 Do not allow an inexperienced person to use the equipment.
- 1.4.8 Do not allow an oil or grease to get on the Oxygen or Acetylene cylinder connections, blow pipes or other equipment.
- 1.4.9 Do not allow the cleaning of grease or oily surfaces with Oxygen.
- 1.4.10 Do not attempt the removal of dirt from greasy clothes with Oxygen. Fire is most certain to follow.
- 1.4.11 Do not allow the cylinders to come in contact with live wires, ground wires, from electrical equipment or objects being electrically welded.
- 1.4.12 Do not roll the cylinders and never use it as rollers even it is empty.
- 1.4.13 Do not use a cylinder that is leaking.
- 1.4.14 Do not permit Acetylene to enter into confined/enclosed space.
- 1.4.15 Do not forget to keep adequate fire protection where flame cutting is being done.
- 1.4.16 Do not forget to take extra precaution when flame cutting or welding is being done near electrical wires.

**1.5 SAFETY WITH GAS CYLINDERS:**

- 1.5.1 Compressed Gas cylinder should not be accepted unless its contents can be quickly determined by the marking on it or by a tag securely attached to it. If the tag becomes detached or the label is defaced the cylinder should not be accepted / used, but should be marked "unidentified" and placed separately for return to the supplier. Under no circumstances, the means of identification of the contents should be removed or tampered with.
- 1.5.2 Inert toxic but non flammable and flammable gases should be segregated during storage. Cylinders should be stored in cool dry and well ventilated place. The cylinders should not be exposed to direct sunlight.



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- 1.5.3 Smoking should be prohibited, particularly where flammable gases are stored. “No Smoking”, signs should be displayed at prominent places in the stores.
- 1.5.4 Full and empty cylinders should be kept separately and “full” and “Empty” notices should be displayed in appropriate position.
- 1.5.5 Except during use of cylinders, whether full or empty valve caps should be in place and the valve should be closed.
- 1.5.6 While in storage or transport, the cylinders should be duly chained or braced. Suitable hand-trolley with a chain or belt for securing the cylinder should be used for transporting cylinders.
- 1.5.7 Cylinders should not be kept in the vicinity of sources of heat such as furnaces, radiators steam pipe, ovens; etc. This is particularly important in the case of cylinders of liquefied gases.
- 1.5.8 Oxygen Cylinder valves and fittings should not be lubricated except under specific advice from the gas supplier. On no account should oil or greases be used on cylinder because of the risk of fire or explosion.
- 1.5.9 Joint fittings or piping made of copper or of an alloy containing more than 70% copper should not be used in connection with Acetylene cylinders.
- 1.5.10 Acetylene should not be used at a pressure exceeding 15 Pounds per Sq.Inch.
- 1.5.11 Cylinders of Acetylene and of liquefied gases should be stored upright.
- 1.5.12 Round bottomed cylinders should laid on the floor and stacked pyramid style, not more than 4 m high, with substantial wooden wedges retaining the bottom layer at each side and with outlet valves facing the same way. Flat or concave bottomed cylinders may be stored upright provided they are placed such that they cannot be accidentally knocked down .