

SAFE WORK PROCEDURES ELECTRIC WELDING



SPECIAL INSTRUCTIONS:

1. All welding should be carried out in enclosed booths where possible to reduce incidence of flashes to other persons.
2. Where welding in a booth is not practicable, welding curtains are to be erected around the area where the welding is to be carried out.
3. All welding work must be carried out in accordance with the provisions and recommendations of Australian Standard AS/NZS 1674 *Safety in welding and allied processes*.

Sequence	Identified hazards	Key processes to be followed	Precautions / PPE required
1. Preparation of work area	Flash burns	Provide welding curtains around areas where welding is to be carried out to protect other persons from flashes. Provide appropriate warning signs advising of welding being carried out, and means of restricting access into welding areas.	Wear eye protection to protect eyes from random flashes. Restrict unauthorised entry to welding areas.
2. Welding processes	Ray burns to eyes and skin Spatter burns Welding fume Harmful exposure Electric shock Slag chips in eyes; accidental flashes	Welding arc has high UV component, and molten metal and hot slag from weld can burn through normal clothing and cause burns. Cotton drill or woollen clothing should be worn when welding. Specialised welders clothing should be worn by persons carrying out production or fabrication work. Welding of some metals (aluminium, zinc, galvanised steel, etc.), will release harmful fumes. Where possible, provide local fume extraction or exhaust ventilation to prevent escape of smoke and fumes from welding into atmosphere. Use of supplied air respirator may be necessary in confined spaces or work areas. Avoid welding in wet areas where possible; provide rubber insulating mats. Avoid welding in wet or damp clothing. Polycarbonate safety spectacle lenses can reduce eye damage caused by harmful levels of UV radiation and prevent injury from slag chips.	Welding helmet must be worn. Wear foot and body protection . Leather apron, gauntlets, apron, and spats should be worn. Dust mask or respirator must be worn when metal fume may be present. Provide fume extraction system to minimise spread of fumes. Provide insulating mats. Wear waterproof clothing and footwear in wet conditions. Wear eye protection at all times when welding.
3. MIG welding	Ray burns Gas cylinders \ Welding fume Gasless wire welding	Unshielded welding arc will cause ray burns more readily than a shielded welding arc. Gas cylinders must be secured against falling and accidental damage. Regulators must be set correctly, and gas turned off when not in use. Welding of some metals (aluminium, zinc, galvanised steel, etc.), will release harmful fumes. This process has a feed wire which contains a protective flux which removes the need for the inert gas protection for the weld. The weld flux will produce harmful smoke in addition to the normal metal fumes. Provide local fume extraction or exhaust ventilation to prevent escape of smoke and fumes from welding into atmosphere.	Wear welding helmet, leather apron, gauntlets, apron, and specialised welders clothing . Wear eye protection when welding. Wear dust mask or respirator where atmospheric contaminants may be released. Provide fume extraction system to minimise spread of fumes. Use supplied air respirator in confined spaces or work areas.

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4. TIG welding	Ray burns Gas cylinders Welding fume	Unshielded welding arc will cause ray burns more readily than a shielded welding arc. Gas cylinders must be secured against falling and accidental damage. Regulators must be set correctly, and gas turned off when not in use. Welding of some metals (aluminium, zinc, galvanised steel, etc.), will release harmful fumes. Provide adequate natural or local mechanical ventilation in welding areas. Provide means of venting welding gases and fumes to outside of building – prevent spread of welding fumes into adjoining work areas.	Wear welding helmet, leather apron, gauntlets, apron, and specialised welders clothing. Wear eye protection when welding. Wear dust mask or respirator where atmospheric contaminants may be released. Provide fume extraction system.
5. Working in hot conditions	Heat stress	Provide adequate natural or mechanical ventilation in areas where hot work processes are carried out Provide adequate supply of cool water in areas where work is carried out. Apply work-rest regimes in extreme conditions	Wear air-flow welding helmet. Provide cooling ventilation where possible to reduce temperature of area where welding is carried out.
6. Use of automatic welding helmets	Welding flash	Select helmet which is best suited to class of work being carried out. Helmets must be fitted with an auto-darkening lens that is shade #3 or #4 when inactivated and which darkens automatically to shade #8 to #13 to provide required protection for type of welding and amperages used. Check operation of controls and adjust to suit application and work being performed. Select shade appropriate to work performed and amperage used. Ensure that users are instructed in correct use of automatic welding helmets, and that manufacturer's safe operating instructions are understood. Inspect lenses frequently, and replace any scratched, cracked or pitted lenses which may impair visibility and reduce protection immediately	Use fast switching time for production or heavy fabrication work. Use cover lens to protect auto lens. Ensure replacement parts are available. Do not use helmet if controls are faulty, or if helmet is defective in any way.. Provide operating instructions for helmet to all users. Repairs to be carried out only by a competent person using correct parts.
7. Maintenance and testing	Electric shock	Work on electrical equipment must only be carried out by an electrical worker who is licensed to carry out the work. Electric welders should be inspected and tested by a licensed electrician or other competent person at specified intervals for the type of workplace – factories, workshops, etc. – every 6 months; construction sites – every 3 months.	Do not allow unauthorised repairs to electrical plant or equipment. A current test tag must be attached by the person who carried out the test. Out-of-test equipment must not be used.

PRECAUTIONS:

The following precautions are to be observed in areas where these procedures are carried out.

