Procedure: MIG Welding Safety Guidelines

Cathodic Anodes Australasia

Purpose

To identify possible hazards involved in the operation of the MIG welder and provide appropriate processes and safety instructions to minimise risk.

Procedure

PLEASE NOTE: IMPORTANT INSTRUCTIONS

1. For reducing incidence of flashes to other people, carry out welding in enclosed booths, where possible.
2. If welding in booths is not possible, arrange for welding curtains to be erected around the area where the welding is to be carried out.
3. All welding must conform to the provisions and recommendations of Australian Standard AS 1674 - Safety in Welding and Allied Processes.

JOB SEQUENCE	POSSIBLE HAZARDS	PROCESSES TO FOLLOW	OPERATIONAL SAFETY CHECKS & PPE
1. Preparation of work area	Flash burns	Welding curtains must be provided around the areas where welding is to be carried out, for protecting other persons from flashes.	Wearing eye protection for protecting eyes from random flashes is mandatory.
		Restrict access into welding areas, and provide appropriate warning signs advising welding being carried out.	Unauthorized entry to welding areas must be restricted.
2. Welding processes	Ray burns to eyes and skin	Serious injury to eyes and severe burns to unprotected skin can be caused by exposure to arc flash, since welding arc has high UV component.	Wearing of welding helmet is necessary. Wearing foot and body protection is necessary.
	Spatter burns	Hot slag and molten metal from welding process can burn through normal clothing and cause burns.	When welding, it is recommended to wear cotton drill or woollen clothing.

JOB SEQUENCE	POSSIBLE HAZARDS	PROCESSES TO FOLLOW	OPERATIONAL SAFETY CHECKS & PPE
2. Welding processes continued...		For persons carrying out fabrication or production work, wearing specialized welders clothing is necessary.	
	Welding fume, harmful by-products	Some metals such as galvanized steel, zinc, aluminium, etc., release harmful fumes when being welded.	Where atmospheric contamination may occur, respirator or dust mask must be worn.
		Exhaust ventilation or local fume extraction must be provided for preventing smoke and fumes from welding to escape into the atmosphere. Supplied air respirator may be necessary in confined spaces or work areas.	For minimizing spread of fumes, provide fume extraction system.
	Electric shock	Do not weld in wet areas. If unavoidable, use rubber-insulating mats.	Provide insulating mats.
		Never attempt welding in damp or wet clothing.	Wearing waterproof clothing and footwear is necessary in wet conditions.
	Slag chips in eyes; accidental flashes	For reducing eye damage from harmful levels of UV radiation and preventing injury from slag chips, use safety spectacle lenses made of polycarbonate.	Wearing eye protection is necessary.

JOB SEQUENCE	POSSIBLE HAZARDS	PROCESSES TO FOLLOW	OPERATIONAL SAFETY CHECKS & PPE
3. MIG welding, TIG Welding & Gas Metal Arc Welding	Ray burns	Unshielded welding arcs tend to cause ray burns more readily than a shielded welding arc.	Wearing welding helmet, leather apron, gauntlets, apron and specialized welders' clothing is necessary.
	Gas bottle hazards	Gas bottles must be secured against falling and accidental damage.	
		Set the regulators properly and turn off the gas when not in use.	
	Welding fume	Some metals, such as galvanized steel, zinc, aluminium, etc., can release harmful fumes, when being welded.	Wearing eye protection is necessary. Where atmospheric contaminants may be released, wearing respirator or dust mask is necessary.
	Gasless wire welding	The feed wire in this process has a protective flux, which does not require inert gas protection for the weld. In addition to normal metal fumes, the weld flux produces harmful smoke. Exhaust ventilation or local fume extraction must be provided for preventing the escape of fumes and smoke from welding into atmosphere.	For minimizing spread of fumes, fume extraction system may have to be provided.
		Supplied air respirator may be necessary in confined spaces or work areas.	

JOB SEQUENCE	POSSIBLE HAZARDS	PROCESSES TO FOLLOW	OPERATIONAL SAFETY CHECKS & PPE
4. MIG welding, TIG Welding & Gas Metal Arc Welding	Ray burns	Unshielded welding arcs tend to cause ray burns more readily than a shielded welding arc.	Wearing welding helmet, leather apron, gauntlets, apron and specialized welders' clothing is necessary.
	Gas bottle hazards	Gas bottles must be secured against falling and accidental damage.	
		Set the regulators properly and turn off the gas when not in use.	
	Welding fume	Some metals, such as galvanized steel, zinc, aluminium, etc., can release harmful fumes, when being welded.	Wearing eye protection is necessary. Where atmospheric contaminants may be released, wearing respirator or dust mask is necessary.
		In welding areas, provide local mechanical ventilation or adequate natural ventilation.	For minimizing spread of fumes, fume extraction system may have to be provided.
		Welding fumes must be prevented from spreading into adjoining work areas. Means of venting welding fumes and gases to outside of building must be provided.	
5. Working in hot conditions	Heat stress	Areas where hot work processes are carried out must have adequate mechanical or natural ventilation.	Wearing airflow welding helmet is necessary.

JOB SEQUENCE	POSSIBLE HAZARDS	PROCESSES TO FOLLOW	OPERATIONAL SAFETY CHECKS & PPE
5. Working in hot conditions continued...	Heat stress continued...	Areas where work is carried out must be provided with adequate supply of cool water.	To reduce the temperature of the area where welding is carried out, provide cooling ventilation.
		In extreme conditions, apply work-rest regimes.	
6. Use of automatic welding helmets	Welding flash	Helmets must be selected to be best suitable for the class of work being carried out.	For production or heavy fabrication work, use fast switching time.
		Helmets should be fitted with shade 3-4 filter lens and cartridge for providing the required protection for the type of welding and amperage used.	For protecting the auto lens, use a cover lens.
		Before use on non-solar powered cartridge helmets, check battery condition.	Make sure replacement parts are available.
		If switching time increases noticeably or if damaged, replace the cartridge.	Never use a faulty helmet.
		Make sure to instruct all users in correct use of automatic welding helmets, and that safe operating instructions of the manufacturer are understood.	All users must be provided with operating instructions for helmets.
7. Maintenance	Electric shock	Only a licensed electrical worker must carry out maintenance work on electrical equipment.	

END OF DOCUMENT