

TIG Welding

Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

THIS RISK ASSESSMENT IS APPROVED BY THE PCBU ON THIS PROJECT

Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.

Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS

Client:	SCOPE OF WORKS
Project Name:	
Project Address:	
Project Manager:	
Contact Phone:	
Date Risk Assessment supplied to Project Manager:	



RISK MATRIX									
LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC	SCORE	ACTION	HIERARCHY OF CONTROLS	
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE			Elimination Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	Substitution Replace the hazard.	
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Review before work starts.	Isolation Isolate People from the hazard	
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	2M MODERATE	Ensure control measures in place.	Engineering Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	Administrative Change	
								PPE	

Risk Rating & Required Action:	
4A	Stop work. The risk is intolerable. Eliminate the hazard or redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or higher-level authorisation is required.
3H	Review and approve additional controls for the task parts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
1L	Proceed, following standard operating procedures. Monitor and keep records.

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
Catastrophic	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
Major	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
Moderate	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
Minor	First-aid only, no lost time	negligible delay	Isolated non-conformance
Insignificant	No injury	no schedule impact	Deviation caught and corrected on site

Notes on Hierarchy of Controls:
Remember to apply controls in the preferred order shown by the coloured pyramid:

1. **Eliminate**
2. **Substitute**
3. **Isolate**
4. **Engineering**
5. **Administrative**
6. **PPE**

Always document **why** a lower-order control is accepted if elimination or substitution is not reasonably practicable.

aligned with Safe Work Australia's Managing the risk of fatigue at work (2023) and ISO 45001:2018 clauses 6–8.

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
1. Governance, WHS Duties and Consultation	<ul style="list-style-type: none"> Lack of clear allocation of WHS responsibilities for welding activities under WHS Act 2011 leading to gaps in oversight Insufficient consultation with welders, supervisors and HSRs on TIG welding risks and controls Inadequate integration of TIG welding risks into the organisation's overall WHS management system Failure to ensure PCBUs, officers and supervisors understand their due diligence obligations in relation to welding operations No formal process to review and update welding-related WHS policies when legislation, standards or work practices change 	High	<ul style="list-style-type: none"> Establish and document a WHS governance structure that clearly defines PCBUs, officers, managers and supervisors' responsibilities for TIG welding risk management in line with WHS Act 2011 and WHS Regulation Include TIG welding in the organisation's WHS policy/risk management procedure and consultation arrangements, referencing Safe Work Australia Model Code of Practice for Welding Processes Implement regular WHS consultation forums and toolbox talks with welders and health and safety representatives specifically addressing TIG welding risks, proposed controls and incident learnings Provide targeted compliance training for officers and senior managers covering TIG welding hazards, required resources, and monitoring obligations Schedule formal annual reviews of welding-related WHS procedures, incorporating changes in legislation, Australian Standards (e.g. AS/NZS 1674 series), and feedback from workers and audits Ensure contracts with host employers, labour hire providers and subcontractors clarify shared WHS duties and expectations regarding TIG welding safety management Maintain records of WHS decisions related to welding, including risk assessments, consultation outcomes and approvals for significant changes to welding operations 	Medium
2. Procurement, Design and Engineering Controls	<ul style="list-style-type: none"> Selection of TIG welding plant and equipment that is not fit for purpose or non-compliant with relevant Australian Standards Inadequate consideration of elimination or substitution options at the design and procurement stages (e.g. use of alternative joining methods for less hazardous processes) Poor workshop layout increasing exposure to welding fumes, radiation, manual handling and interactions with other plant Lack of engineered ventilation or fume extraction systems leading to excessive exposure to welding fumes and gases Insufficient segregation of welding bays from other work activities creating fire, burn and eye injury risks for non-welding personnel 	High	<ul style="list-style-type: none"> Implement a formal procurement procedure requiring verification that TIG welding plant, power sources, torches and accessories comply with relevant Australian Standards and manufacturer specifications Require pre-purchase risk assessments for new or significantly modified welding processes, documenting consideration of elimination or substitution of welding where reasonably practicable Engage competent WHS and engineering personnel in the design of welding bays to optimise layout for safe access, ventilation, segregation, and emergency egress Install local exhaust ventilation (LEV) or fume extraction systems designed by a competent person to effectively capture and remove TIG welding fumes, with capacity documented and verified Provide fixed welding screens, barriers and appropriate signage to segregate TIG welding areas and prevent exposure of other workers to UV radiation and sparks Ensure welding workstations are ergonomically designed (e.g. adjustable benches, jigs, rotating fixtures) to minimise sustained awkward postures and excessive manual handling Establish an approval process for any change in consumables (e.g. shielding gases, filler metals) requiring review of Safety Data Sheets (SDS) and update of risk assessments 	Medium
3. Plant, Equipment Integrity and Maintenance Systems	<ul style="list-style-type: none"> Failure of welding plant due to inadequate inspection, testing and maintenance regimes 	High	<ul style="list-style-type: none"> Develop and implement a documented preventive maintenance program for all TIG welding plant and associated equipment based on manufacturer recommendations and Australian Standards 	Medium

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	<ul style="list-style-type: none"> Degraded or damaged cables, leads, electrode holders and gas hoses creating electric shock, fire and explosion risks Absence of a formal tagging, isolation and lockout system for defective welding equipment Lack of scheduled calibration and functional checks leading to unsafe welding parameters and poor quality welds Use of non-genuine or incompatible spare parts and accessories compromising equipment safety performance 		<ul style="list-style-type: none"> Introduce a formal equipment inspection checklist for supervisors and competent persons to verify condition of welding machines, leads, torches, connectors, gas systems and cooling systems at set intervals Implement a robust defect reporting, tagging and lockout procedure requiring immediate removal from service of damaged or malfunctioning welding plant until repaired and tested by a competent person Maintain records of all inspections, maintenance, repairs and calibrations for TIG welding equipment, including who completed the work and when it is due Specify requirements for genuine or approved equivalent spare parts and consumables in procurement and maintenance procedures to avoid unsafe substitution Ensure all welding machines, inverters and associated electrical supply systems are installed, inspected and tested by licensed electricians in accordance with electrical safety regulations Conduct periodic audits of welding equipment condition and maintenance records, with corrective actions tracked to completion through the WHS management system 	
4. Hazardous Chemicals, Fumes and Atmospheric Contaminants Management	<ul style="list-style-type: none"> Exposure of welders and nearby workers to hazardous welding fumes, ozone, nitrogen oxides and shielding gases Inadequate management of compressed gas cylinders leading to leak, fire or explosion risks Insufficient control of chemicals associated with TIG welding (e.g. cleaning solvents, pickling pastes, etch spatter products) and poor SDS management Lack of health monitoring for workers regularly exposed to welding fumes and associated substances Inadequate assessment and control of oxygen-deficient or contaminated atmospheres when welding in partially enclosed or confined spaces 	High	[REDACTED]	Medium
5. Electrical Safety and Energy Control Systems	<ul style="list-style-type: none"> Risk of electric shock from faulty welding leads, poor earthing, damaged insulation or wet working conditions 	High	[REDACTED]	Medium

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	<ul style="list-style-type: none"> Inadequate electrical design of welding circuits leading to overloading, short circuits or fire Lack of formal lockout-tagout (LOTO) and isolation procedures when servicing or setting up TIG welding plant Uncontrolled use of extension leads, power boards and adaptors in welding areas Insufficient periodic testing and tagging regime for portable electrical equipment associated with welding operations 		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
6. Competency, Training and Supervision	<ul style="list-style-type: none"> Inadequate competency of welders and assistants to safely operate TIG welding equipment and understand associated hazards Lack of formal verification of qualifications, licences or training certificates for welders and those requiring specific competencies Insufficient supervision of specialist or new, young or inexperienced welders and during high-risk activities Training that focuses only on welding quality without adequately covering WHS obligations, risk controls and emergency response No systematic refresher training or competency reassessment when equipment, processes or standards change 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
7. Safe Work Procedures, Permits and Work Planning	<ul style="list-style-type: none"> Absence of formal safe work procedures (SWPs) for TIG welding leading to inconsistent practices Inadequate planning and authorisation of high-risk welding tasks, including hot work on or near flammable materials or in restricted areas Failure to integrate TIG welding controls into broader site systems (e.g. isolation plans, process safety, construction sequencing) Unclear criteria for when permits to work or hot work permits are required, resulting in uncontrolled ignition sources No formal process to assess and manage changes to welding methods, locations or schedules 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium
8. Personal Protective Equipment Management	<ul style="list-style-type: none"> Inconsistent use of appropriate PPE resulting in burns, fire damage, exposure and inhalation injuries Provision of PPE that does not meet relevant Australian Standards or is unsuitable for TIG welding conditions Inadequate systems for PPE issue, maintenance, replacement and fit, especially for respiratory protection Lack of training for welders and supervisors on correct selection, limitations and care of PPE Over-reliance on PPE instead of higher order controls within the hierarchy of control 	Medium	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Low

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
			[REDACTED]	
9. Facility, Housekeeping and Fire Safety Systems	<ul style="list-style-type: none"> • Accumulation of combustible materials, flammable liquids or gases in or near welding areas increasing fire risk • Inadequate fire detection, suppression and emergency equipment suitable for welding-related fires • Blocked access and egress routes from welding bays compromising emergency evacuation • Poor housekeeping leading to trip hazards, obstructed equipment access and increased likelihood of contact with hot work surfaces • Lack of formal hot work area designation and control of ignition sources near flammable atmospheres containers 	High	[REDACTED]	Medium
10. Contractor, Labour Hire and Third-Party Management	<ul style="list-style-type: none"> • Contractors and labour hire workers performing TIG welding without alignment to the PCBU's WHS standards and procedures • Unclear allocation of WHS responsibilities between host PCBU, contractors and labour hire workers for welding work • Inadequate prequalification and selection processes for welding contractors, leading to engagement of parties with poor WHS performance • Insufficient onboarding, induction and supervision of third-party welders in site-specific TIG welding hazards and controls • Failure to coordinate TIG welding activities among multiple PCBUs operating in the same workplace 	High	[REDACTED]	Medium

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
			[REDACTED]	
11. Incident Reporting, Monitoring and Continuous Improvement	<ul style="list-style-type: none"> • Under-reporting of welding-related incidents, near misses and health concerns, preventing identification of systemic issues • Lack of structured investigation of welding incidents leading to repeated failures and missed opportunities for learning • Inadequate performance monitoring of TIG welding safety systems, including audits and inspections • Failure to track and close corrective actions arising from welding risk assessments, incidents and audits • Insufficient review of welding safety performance by management, resulting in inadequate resourcing or priority 	Medium	[REDACTED]	Low
12. Health Surveillance, Ergonomics and Psychosocial Risk Management	<ul style="list-style-type: none"> • Long-term health effects from chronic exposure to welding fumes, UV radiation and noise not being identified or managed • Musculoskeletal disorders due to poor ergonomic design of welding tasks and prolonged static postures • Fatigue and workload pressures contributing to errors and reduced adherence to welding safety procedures • Psychosocial hazards such as bullying, production pressure or inadequate support impacting safe decision-making during welding activities • Lack of systems to identify and manage fitness for work issues in 	Medium	[REDACTED]	Low

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	welders (e.g. vision, respiratory conditions)		[REDACTED]	

SAMPLE

EMERGENCY RESPONSE – CALL 000 FOR EMERGENCIES

Ensure to have an Emergency Management Plan in place as well as adequate numbers of trained first aid staff with easy access to fully stocked first aid kits, rescue equipment, material safety data sheets, adequate access to emergency communication equipment and fire-fighting equipment suitable for all classes of fire and ignition sources.

LEGISLATIVE REFERENCES

RELEVANT LEGISLATION AND CODES OF PRACTICE. DELETE THE LEGISLATIVE REFERENCES FOR ANY STATE THAT ARE NOT APPLICABLE

Queensland & Australian Capital Territory

Work Health and Safety Act 2011
 Work Health and Safety Regulations 2011
 Legislation QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/work-health-and-safety-laws>
 Codes of Practice QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice>
 Legislation ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/acts-and-regulations>
 Codes of Practice ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/codes-of-practice>

Victoria

Occupational Health and Safety Act 2004
 Occupational Health and Safety Regulations 2017
 Legislation VIC: <https://www.worksafe.vic.gov.au/occupational-health-and-safety-act-and-regulations>
 Codes of Practice VIC: <https://www.worksafe.vic.gov.au/compliance-codes-and-codes-practice>

New South Wales

Work Health and Safety Act 2011
 Work Health and Safety Regulations 2025
 Legislation NSW: <https://www.safework.nsw.gov.au/legal-obligations/legislation>
 Codes of Practice NSW: <https://www.safework.nsw.gov.au/resource-library/list-codes-of-practice>

Western Australia

Work Health and Safety Act 2020
 Work Health and Safety Regulations 2022
 Legislation Western Australia: <https://www.commerce.wa.gov.au/worksafe/legislation>
 Codes of Practice WA: <https://www.commerce.wa.gov.au/worksafe/codes-practice>

Northern Territory

Work Health and Safety (National Uniform Legislation) Act 2011
 Work Health and Safety (National Uniform Legislation) Regulation 2011
 Legislation NT: <https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws>
 Codes of Practice NT: <https://worksafe.nt.gov.au/laws-and-compliance/codes-of-practice>

Safe Work Australia Links

Law and Regulation (All States): <https://www.safeworkaustralia.gov.au/law-and-regulation>
 Model Codes of Practice: <https://www.safeworkaustralia.gov.au/resources-publications/model-codes-of-practice>

South Australia

Work Health and Safety Act 2012 (SA)
 Work Health and Safety Regulations 2012 (SA)
 Legislation for SA: <https://www.safework.sa.gov.au/resources/legislation>
 Codes of Practice for SA: <https://www.safework.sa.gov.au/workplaces/codes-of-practice#COPs>

Model Codes of Practice

- Managing noise and preventing hearing loss at work
- Confined spaces
- Labelling of workplace hazardous chemicals
- Managing risks of hazardous chemicals in the workplace
- Welding processes
- First aid in the workplace
- Managing the risk of falls at workplaces
- Hazardous manual tasks
- Managing the risk of falls in housing construction
- Managing electrical risks in the workplace
- Demolition work
- Excavation work
- Work health and safety consultation, cooperation and coordination
- Managing the work environment and facilities
- How to manage work health and safety risks
- Managing risks of plant in the workplace
- Construction work

Tasmania

Work Health and Safety Act 2012
 Work Health and Safety (Transitional and Consequential Provisions) Act 2012
 Work Health and Safety Regulations 2012
 Work Health and Safety (Transitional) Regulations 2012
 Legislation for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/acts-and-regulations>
 Codes of Practice for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/codes-of-practice>

Details of permits, licenses or access required by regulatory bodies (add or delete as required):

- Permits from local council
- Authorisation to commence work
- Any required documents.