Industrial Laser Cutter & Plasma Safety Inspection Checklist

Site / Project		**Address**	
Inspector name		**Company**	
Date		**Time**	

Documentation aid only. Adapt this resource to the site, manufacturer instructions, and applicable local requirements. It does not replace a competent person, professional judgment, legal advice, or a required statutory form.

Inspection checklist

Laser Enclosure & Interlock System

☐	Verify laser enclosure is intact and free from damage (holes, cracks) that could allow beam escape. (ANSI Z136.1)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Test all safety interlocks on access doors and panels. Ensure laser shuts down immediately upon opening. (BS EN 60825-1)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Confirm emergency stop buttons are functional and easily accessible at all operator stations. (OSHA 1910.147)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Inspect all warning labels for legibility and proper placement on the laser enclosure. (ANSI Z136.1)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Examine viewing windows for damage (scratches, cracks) and ensure they provide adequate laser radiation protection. (BS EN 60825-1)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Visually inspect the laser beam path for any obstructions or reflective surfaces that could cause unintended beam redirection. (ANSI Z136.1)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Verify all electrical connections are secure and properly grounded to prevent electrical shock hazards. (NFPA 70E)	☐ Pass	☐ Fail	☐ N/A	Notes:
☐	Inspect the laser cooling system (if applicable) for leaks and proper operation to prevent overheating. (Manufacturer's Specs)	☐ Pass	☐ Fail	☐ N/A	Notes:

Confirm that laser control software is functioning correctly and prevents unauthorized operation or parameter changes. (Manufacturer's Specs)	Pass	Fail	N/A	Notes:	
Verify that the laser system key is secured and only accessible to authorized personnel. (ANSI Z136.1)	Pass	Fail	N/A	Notes:	

Fume Extraction System

Verify airflow indicator on the fume extraction system shows adequate suction during laser/plasma operation. (ACGIH Industrial Ventilation Manual)	Pass	Fail	N/A	Notes:	
Inspect fume extraction filters for clogging or damage. Replace filters according to manufacturer's recommendations. (Manufacturer's Specs)	Pass	Fail	N/A	Notes:	
Examine fume extraction ductwork for leaks, corrosion, or blockages. (SMACNA Guidelines)	Pass	Fail	N/A	Notes:	
Ensure the fume extraction exhaust is located away from air intakes and occupied areas. (ACGIH Industrial Ventilation Manual)	Pass	Fail	N/A	Notes:	
Confirm the fume extraction fan is operating smoothly and without excessive noise or vibration. (Manufacturer's Specs)	Pass	Fail	N/A	Notes:	
Verify the fume capture hood is properly positioned to effectively capture fumes generated during cutting. (ACGIH Industrial Ventilation Manual)	Pass	Fail	N/A	Notes:	
Confirm grounding continuity of the fume extraction system to prevent static electricity buildup and potential fire hazards. (NFPA 70)	Pass	Fail	N/A	Notes:	
Review the fume extraction system maintenance log to ensure regular inspections and maintenance are performed. (Company Policy)	Pass	Fail	N/A	Notes:	
Inspect and clean or replace pre-filters on the fume extraction system to extend the life of the main filters. (Manufacturer's Specs)	Pass	Fail	N/A	Notes:	
Monitor the differential pressure across the filters to determine when filter replacement is necessary. (Manufacturer's Specs)	Pass	Fail	N/A	Notes:	

Cutting Bed & Fire Safety

Ensure the cutting bed is free from combustible materials (scrap metal, paper, oil) that could ignite during laser/plasma operation. (NFPA 51B)	Pass	Fail	N/A	Notes:	
Verify the fire suppression system (if installed) is functional and properly charged. (NFPA 13)	Pass	Fail	N/A	Notes:	
Confirm a suitable fire extinguisher (Class ABC or D) is readily accessible near the laser/plasma cutting area. (NFPA 10)	Pass	Fail	N/A	Notes:	
Inspect the fire extinguisher to ensure it is fully charged and has been inspected within the last year. (NFPA 10)	Pass	Fail	N/A	Notes:	
If using a water table, verify the water level is adequate to submerge cut parts and prevent sparks. (Best Practice)	Pass	Fail	N/A	Notes:	
Ensure slag and dross are regularly removed from the cutting bed to prevent buildup and potential fire hazards. (Best Practice)	Pass	Fail	N/A	Notes:	
If using oxygen assist gas, check for leaks in the oxygen supply lines and connections. (CGA G-4)	Pass	Fail	N/A	Notes:	
If using nitrogen assist gas, check for leaks in the nitrogen supply lines and connections. (CGA P-1)	Pass	Fail	N/A	Notes:	
Verify the workpiece is properly grounded with a grounding clamp to prevent stray currents and potential fire hazards. (NFPA 70)	Pass	Fail	N/A	Notes:	
Confirm the material being cut is compatible with the laser/plasma system and does not produce hazardous byproducts. (SDS Review)	Pass	Fail	N/A	Notes:	

Personal Protective Equipment (PPE)

Verify appropriate laser protective eyewear is available and in good condition (no scratches or damage) for the specific laser wavelength. (ANSI Z136.1)	Pass	Fail	N/A	Notes:	
Confirm laser eyewear is certified and labeled with the correct optical density (OD) for the laser in use. (ANSI Z136.1)	Pass	Fail	N/A	Notes:	
Ensure a face shield is worn in addition to laser eyewear to protect against sparks and debris. (OSHA 1910.133)	Pass	Fail	N/A	Notes:	
Verify appropriate gloves are worn to protect against burns and cuts from handling materials. (OSHA 1910.138)	Pass	Fail	N/A	Notes:	

- [ ] Ensure a fire-resistant apron is worn to protect clothing from sparks and molten metal. (Best Practice) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Confirm a properly fitted respirator is worn if fume extraction is inadequate or when cutting materials that produce hazardous fumes. (OSHA 1910.134) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Verify hearing protection is available and used if noise levels exceed permissible exposure limits. (OSHA 1910.95) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Ensure safety shoes are worn to protect feet from falling objects and sharp materials. (OSHA 1910.136) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Confirm all operators have been trained on the proper use and maintenance of required PPE. (OSHA 1910.132) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Inspect all PPE for damage and ensure it is properly stored when not in use. (OSHA 1910.132) ☐ Pass ☐ Fail ☐ N/A Notes:

Documentation & Training

- [ ] Verify Standard Operating Procedures (SOPs) for the laser/plasma cutter are readily available and up-to-date. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Confirm all operators have received documented training on laser/plasma safety, operation, and emergency procedures. (ANSI Z136.1) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Review maintenance logs to ensure regular maintenance and inspections are performed on the laser/plasma system. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Ensure Safety Data Sheets (SDS) for all materials being cut are readily available and reviewed by operators. (OSHA 1910.1200) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Verify a risk assessment has been conducted for the laser/plasma cutting process and control measures are implemented. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Confirm an emergency plan is in place and all operators are familiar with emergency procedures. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] Verify a designated Laser Safety Officer (LSO) is responsible for overseeing laser safety and compliance. (ANSI Z136.1) ☐ Pass ☐ Fail ☐ N/A Notes:
- [ ] If applicable, ensure a permit-to-work system is in place for high-risk laser/plasma cutting operations. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes:

- [ ] Confirm that the equipment manuals are available and easily accessible for reference. (Manufacturer's Specs) ☐ Pass ☐ Fail ☐ N/A Notes: _____

- [ ] Verify that a system is in place for reporting and investigating incidents and near misses. (Company Policy) ☐ Pass ☐ Fail ☐ N/A Notes: _____

Findings

#	Item	Location	Severity	Action required
1				
2				
3				
4				
5				
6				
7				
8				

Signature

Inspector signature _____ **Name** _____

Date _____