Oklahoma CTE

Gas Tungsten Arc Welding (2001)

Adopted 2001

Demonstrate Employability Skills

18. **Identify employment opportunities.** A.18

19. **Identify levels of training recommended for related careers.** A.19

20. **Understand salary, wages and benefits packages.** A.20

Safety

26. Explain the purpose for safety policies. A.26

27. Discuss the role of OSHA and EPA
Locate information in MSDS A.27

28. Participate in OSHA training, if possible
Lock Out/Tag Out
HAZCOM
MSDS
Bloodborne Pathogens A.28

29. Explain the proper steps in reporting an accident or emergency. A.29

30. Explain the hazards associated with specific types of equipment and tools. A.30

31. Perform machine operator safety checks of equipment and accessories, when necessary. A.31

32. Practice tool safety. A.32

33. Describe the types of fire hazards found in the workplace. A.33

34. Discuss electrical hazards. A.34

35. Demonstrate safe use of personal protective equipment. A.35

36. Demonstrate safe material handling techniques
Lifting
Transporting
Storing A.36

37. Understand established first aid procedures. A.37

38. Practice good housekeeping. A.38

39. Comply with company safety policies. A.39

Basic Academic Skills

40. Apply mathematical operations involving whole numbers, fractions, decimals, percentages, mathematical word problems, ratios, etc., when necessary
Addition
Subtraction
Multiplication
Division A.40
41. Apply advanced mathematical operations, when necessary
Algebra
Geometry
Trigonometry
Calculus
Statistical Methods A.41
42. Apply scientific principles, when necessary
Physics
Chemistry A.42
43. Interpret charts, table, and graphs. A.43
44. Apply reading and writing skills, when necessary. A.44

Blueprint Reading

50. Identify basic elements of blueprints
Terms
Components
Symbols A.50
51. Discuss different types of drawings. A.51
52. Interpret drawings
Bill of Materials
Revisions
Tolerances A.52
53. Interpret symbols. A.53

Measurement Tools and Techniques

54. Identify types of measuring instruments. A.54
55. Use appropriate measurement instrument for a measurement task. A.55
56. Read measuring instruments. A.56
57. Identify the appropriate formula and units for a measurement task. A.57
58. Differentiate between English and Metric measurement systems, when necessary. A.58
59. Communicate measurements using proper symbols or words. A.59

B. Interpret Drawing and Welding Symbols and Written Welding Procedures

01. Interpret basic elements of drawing/sketch
Structural members
Sequence of assembly
Dimensions and tolerances
Scale
View interpretation
List of materials B.01
02. Interpret welding symbol information
Type of weld required
Filler metal
Special details
Non-destructive testing requirements B.02
03. Interpret written welding procedures
Procedure ID number crossreferencing to drawing
Appropriate welding process/base materials/filler materials
Appropriate machine settings B.03

Perform Gas Tungsten Arc Welding (GTAW)	**01.** Perform safety inspections of equipment and accessories - Protective clothing and equipment - Hand tools - Welding equipment and accessories - Shielding gas equipment and accessories - Work area F.01
	02. Make minor external repairs to equipment and accessories (preventative maintenance only) - Manufacturer's recommendations - Company repair policy - Equipment troubleshooting - Porosity - Gas leaks F.02
	03. Set up for gas tungsten arc welding operations on plain carbon steel, aluminum, and stainless steel plate - Review appropriate weld problems - Filler metal selection - Adjust voltage - Proper gas flow rate - Parts set up and preheated as necessary - Base metal preparation F.03
	04. Operate gas tungsten arc welding equipment - Make fillet and groove welds on plain carbon steel plate, aluminum and stainless steel plate - Workmanship F.04
	05. Make fillet welds, 2F and 3F positions, on plain carbon steel plate EWCe-2 electrodes F.05
	06. Make groove welds, 3G position without backing, on plain carbon steel plate EWCe-2 electrodes F.06
	07. Make 1F-2F welds on aluminum plate EWP &/or EWZr tungsten electrodes F.07
	08. Make 1G with backing welds on aluminum plate EWP and/or EWZr tungsten electrodes. F.08
	09. Make 1F-2F-3F welds on stainless steel plate EWCe-2 electrodes. F.09
	10. Make 1G-2G-3G welds on stainless steel plate EWCe-2 electrodes. F.10
Perform Plasma Arc Cutting and Gouging	**01.** Perform safety inspections of equipment and accessories - Protective clothing and equipment - Plasma arc cutting equipment and accessories - Compressed gas system and accessories - Required tools - Work area - Communicate hazard warnings J.01
	02. Make minor external repairs to equipment and accessories (preventative maintenance only) - Manufacturer's recommendations - Company repair policy - Equipment troubleshooting (clean gas and tip) J.02
	03. Set up for manual plasma arc cutting operations on plain carbon steel, aluminum, and stainless steel plate - Regulator set for appropriate plasma gas - Tip selection based on gas J.03

	04. **Operate manual plasma arc cutting equipment.** J.04
	05. **Perform shape cutting operations on plain carbon steel, aluminum, and stainless steel plate.** J.05
Perform Welding Inspection and Testing	01. **Examine cut surfaces and edges of prepared base metal parts - Appearance - Uniformity - Proper fit-up - Base metal preparation ** K.01
	02. **Examine tack, intermediate layers, and completed welds - Visual check for weld discontinuity and defects to an acceptable criteria - Destructive or non-destructive examination ** K.02