

Ag Welding Program Standards Criticality Survey 2014

CONTENT STANDARD 1.0: IDENTIFY LAB ORGANIZATIONS AND SAFETY PROCEDURES

Performance Standard 1.1: Demonstrate General Lab Safety Rules and Procedures

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
1.1.1	Describe general shop safety rules and procedures (e.g., safety test).	0	5	19	2.79
1.1.2	Describe OSHA in workplace safety.	3	11	10	2.29
1.1.3	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities (e.g., personal protection equipment – PPE).	0	2	22	2.92
1.1.4	Operate lab equipment according to safety guidelines.	0	7	17	2.71
1.1.5	Identify and use proper lifting procedures and proper use of support equipment (e.g., rigging, chains, straps, cables).	0	6	18	2.75
1.1.6	Utilize proper ventilation procedures for working within the lab/shop area.	0	10	14	2.58
1.1.7	Identify marked safety areas.	1	10	13	2.50
1.1.8	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.	0	8	16	2.67
1.1.9	Identify the location and use of eye wash stations.	1	8	15	2.58
1.1.10	Identify the location of the posted evacuation routes.	1	10	13	2.50
1.1.11	Identify and wear appropriate clothing for lab/shop activities.	1	6	16	2.65
1.1.12	Secure hair and jewelry for lab/shop activities.	2	9	13	2.46
1.1.13	Demonstrate knowledge of the safety aspects of high voltage circuits.	2	5	17	2.63
1.1.14	Locate and interpret material safety data sheets (MSDS).	4	12	8	2.17
1.1.15	Perform housekeeping duties.	5	13	6	2.04
1.1.16	Follow verbal instructions to complete work assignments.	0	14	10	2.42

1.1.17	Follow written instructions to complete work assignments.	0	14	10	2.42
1.1.18	Identify requirements for Hot Work Permits.	5	9	10	2.21
1.1.19	Identify what constitutes a confined space.	5	7	12	2.29
				Answered	24
				Skipped	0

Performance Standard 1.2: Identify and Utilize Proper Tools

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
1.2.1	Identify hand tools and their appropriate usage.	3	14	6	2.13
1.2.2	Identify standard and metric designation	9	12	2	1.70
1.2.3	Demonstrate safe handling and use of appropriate tools.	0	14	9	2.39
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools.	4	16	3	1.96
				Answered	23
				Skipped	1

Performance Standard 1.3: Identify and Utilize Power Tools and Equipment

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
1.3.1	Identify power tools and equipment, and their appropriate usage.	0	18	6	2.25
1.3.2	Demonstrate safe handling and use of appropriate power tools and equipment.	0	12	11	2.48
1.3.3	Demonstrate proper cleaning, storage, and maintenance of power tools and equipment.	4	16	4	2.00
				Answered	24
				Skipped	0

CONTENT STANDARD 2.0: APPLY FUNDAMENTAL PRINT READING, MEASUREMENT, AND LAYOUT/FIT-UP TECHNIQUES

Performance Standard 2.1: Demonstrate Print Reading and Sketching Practices

Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.1.1 Interpret basic elements of a technical drawing (e.g., title block information, dimensions, line types).	3	14	7	2.17
2.1.2 Identify and explain industry standard welding symbols.	0	15	9	2.38
2.1.3 Prepare a materials list from a technical drawing (e.g., bill of material).	7	15	2	1.79
2.1.4 Describe various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, schematic).	13	11	0	1.46
2.1.5 Understand dimensioning, sectional drawings, fasteners, tables, charts, and assembly drawings.	5	16	3	1.92
2.1.6 Sketch or draw a basic welding drawing.	11	12	1	1.58
2.1.7 Fabricate parts from a drawing or sketch.	0	14	10	2.42
Answered				24
Skipped				0

Performance Standard 2.2: Demonstrate Measuring and Scaling Techniques

Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.2.1 Identify industry standard units of measure.	3	15	6	2.13
2.2.2 Convert between customary (e.g., SAE, Imperial) and metric systems.	11	11	2	1.63
2.2.3 Measure and calculate size, area, and volume.	8	14	2	1.75
2.2.4 Determine and apply the equivalence between fractions and decimals.	4	16	4	2.00
2.2.5 Identify measuring tools.	0	18	4	2.18
Answered				24
Skipped				0

Performance Standard 2.3: Utilize Layout Principles and Practices				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.3.1 Interpret drawing, sketch, or specification information.	3	17	4	2.04
2.3.2 Prepare work area for layout.	2	19	3	2.04
2.3.3 Select appropriate materials to complete work assignment.	3	13	8	2.21
2.3.4 Use layout and marking tools as required.	2	18	4	2.08
2.3.5 Layout parts using measurement practices.	0	19	5	2.21
Answered				24
Skipped				0

Performance Standard 2.4: Demonstrate Preparation and Fit-Up Practices				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.4.1 Identify and explain job specifications.	3	16	5	2.08
2.4.2 Use fit-up gauges and measuring devices to check joint fit-up.	4	15	5	2.04
2.4.3 Identify and explain distortion and how it is controlled.	4	17	3	1.96
2.4.4 Fit-up joints using plate and pipe fit-up tools.	4	17	3	1.96
2.4.5 Check for joint misalignment and poor fit-up before and after welding.	3	14	7	2.17
Answered				24
Skipped				0

CONTENT STANDARD 3.0: IDENTIFY PROPERTIES OF MATERIALS				
Performance Standard 3.1: Identify Material Properties and Science				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.1.1 Identify the difference between ferrous and non-ferrous metals.	1	17	6	2.21
3.1.2 Identify and explain forms and shapes of structural metals.	5	14	5	2.00
Explain AWS filler metal classifications systems.	8	12	4	1.83
Identify different types of filler metals.	4	18	2	1.92
Explain the storage and control of filler metals.	4	18	2	1.92
Answered				24
Skipped				0

Performance Standard 3.2: Identify Filler Materials				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.2.1 Explain AWS filler metal classifications systems	11	10	3	1.67
3.2.2 Identify different types of filler metals.	5	17	2	1.88
3.2.3 Explain the storage and control of filler metals.	4	19	1	1.88
Answered				24
Skipped				0

CONTENT STANDARD 4.0: APPLY SHIELDED METAL ARC WELDING (SMAW) TECHNIQUES				
Performance Standard 4.1: Safety Procedures				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
4.1.1 Identify and explain different types of welding current and polarity.	2	15	6	2.17
4.1.2 Perform safety inspections of SMAW equipment and accessories.	3	16	4	2.04
4.1.3 Maintain SMAW equipment and accessories.	3	19	1	1.91
Answered				23
Skipped				1

Performance Standard 4.2: Produce Welds Using SMAW on Carbon Steel				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
4.2.1 Set up for SMAW operations.	5	15	3	1.91
4.2.2 Operate SMAW equipment.	4	16	3	1.96
4.2.3 Perform welds in the 1F position.	5	14	4	1.96
4.2.4 Perform welds in the 2F position.	4	15	4	2.00
4.2.5 Perform welds in the 3F position.	5	15	3	1.91
4.2.6 Perform welds in the 4F position.	6	14	3	1.87
4.2.7 Perform welds in the 1G position.	5	14	4	1.96
4.2.8 Perform welds in the 2G position.	4	15	4	2.00
4.2.9 Perform welds in the 3G position.	5	15	3	1.91
4.2.10 Perform welds in the 4G position.	6	14	3	1.87
4.2.11 Describe 2G, 5G and 6G welding positions.	6	14	3	1.87
Answered				23
Skipped				1

CONTENT STANDARD 5.0: APPLY GAS METAL ARC WELDING (GMAW-S, GMAW) TECHNIQUES

Performance Standard 5.1: Utilize Safety Procedures

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
5.1.1	Identify and explain the use of GMAW equipment (e.g., spray transfer, globular, short circuit, pulse).	5	13	5	2.00
5.1.2	Perform safety inspections of GMAW equipment and accessories.	5	14	4	1.96
5.1.3	Maintain GMAW equipment and accessories.	2	18	3	2.04
5.1.4	Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of GMAW equipment.	1	15	7	2.26
				Answered	23
				Skipped	1

Performance Standard 5.2: Produce Welds Using GMAW-S on Carbon Steel

Answer Choices		Nice to Know	Need to Know	Critical to Know	Rating Average
5.2.1	Set up for GMAW-S operations.	4	11	8	2.17
5.2.2	Operate GMAW-S equipment.	2	13	8	2.26
5.2.3	Perform welds in the 1F position.	4	10	9	2.22
5.2.4	Perform welds in the 2F position.	3	11	9	2.26
5.2.5	Perform welds in the 3F position.	4	11	8	2.17
5.2.6	Perform welds in the 4F position.	4	12	7	2.13
5.2.7	Perform welds in the 1G position.	4	10	9	2.22
5.2.8	Perform welds in the 2G position.	3	11	9	2.26
5.2.9	Perform welds in the 3G position.	4	11	8	2.17
				Answered	23
				Skipped	1

CONTENT STANDARD 6.0: APPLY FLUX CORED ARC WELDING (FCAW-G) TECHNIQUES				
Performance Standard 6.1: Utilize Safety Procedures				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.1.1 Identify and explain the use of FCAW-G equipment.	3	17	2	1.95
6.1.2 Perform safety inspections of FCAW-G equipment and accessories.	3	17	2	1.95
6.1.3 Maintain FCAW-G equipment and accessories.	2	18	2	2.00
6.1.4 Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of FCAW-G equipment.	1	15	5	2.19
Answered				22
Skipped				2

Performance Standard 6.2: Produce Welds Using FCAW-G on Carbon Steel				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.2.1 Set up for FCAW-G operations.	4	11	7	2.14
6.2.2 Operate FCAW-G equipment.	2	13	7	2.23
6.2.3 Perform welds in the 1F position.	4	11	7	2.14
6.2.4 Perform welds in the 2F position.	3	12	7	2.18
6.2.5 Perform welds in the 3F position.	4	11	7	2.14
6.2.6 Perform welds in the 4F position.	5	11	6	2.05
6.2.7 Perform welds in the 1G position.	5	10	7	2.09
6.2.8 Perform welds in the 2G position.	4	11	7	2.14
6.2.9 Perform welds in the 3G position.	5	11	6	2.05
Answered				22
Skipped				2

CONTENT STANDARD 7.0: APPLY GAS TUNGSTEN ARC WELDING (GTAW) TECHNIQUES					
Performance Standard 7.1: Utilize Safety Procedures					
	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.1.1	Perform safety inspections of GTAW equipment and accessories.	4	14	4	2.00
7.1.2	Maintain GTAW equipment and accessories.	3	16	3	2.00
7.1.3	Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of GTAW equipment.	2	16	4	2.09
				Answered	22
				Skipped	2

Performance Standard 7.2: Produce Welds Using GTAW on Carbon Steel					
	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.2.1	Set up for GTAW operations.	5	14	3	1.91
7.2.2	Operate GTAW equipment.	3	16	3	2.00
7.2.3	Perform welds in the 1F position.	4	15	3	1.95
7.2.4	Perform welds in the 2F position.	4	15	3	1.95
7.2.5	Perform welds in the 3F position.	5	14	3	1.91
7.2.6	Perform welds in the 1G position.	4	15	3	1.95
7.2.7	Perform welds in the 2G position.	4	15	3	1.95
7.2.8	Perform welds in the 3G position.	5	14	3	1.91
				Answered	22
				Skipped	2

Performance Standard 7.3: Produce Welds Using GTAW on Aluminum					
	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.3.1	Set up for GTAW operations.	9	10	3	1.73
7.3.2	Operate GTAW equipment.	7	12	3	1.82
7.3.3	Perform welds in the 1F position.	9	10	3	1.73
7.3.4	Perform welds in the 2F position.	10	9	3	1.68
				Answered	22
				Skipped	2

CONTENT STANDARD 8.0: APPLY THERMAL CUTTING PROCESS				
Performance Standard 8.1: Demonstrate Oxy-Fuel Gas Cutting (OFC)				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.1.1 Perform safety inspections of OFC equipment and accessories.	2	9	11	2.41
8.1.2 Maintain OFC equipment and accessories.	2	16	4	2.09
8.1.3 Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of OFC equipment.	2	10	10	2.36
8.1.4 Set up for OFC operations.	4	14	4	2.00
8.1.5 Operate OFC equipment.	2	14	6	2.18
8.1.6 Perform straight, square edge cutting operations in the flat position.	3	12	7	2.18
8.1.7 Perform shape, square edge cutting operations in the flat position.	3	13	6	2.14
8.1.8 Perform straight, bevel edge cutting operations in the flat position.	4	13	5	2.05
8.1.9 Perform scarfing and gouging operations to remove base and weld metal, in flat and horizontal positions.	10	7	5	1.77
Answered				22
Skipped				2

Performance Standard 8.2: Demonstrate Plasma Arc Cutting (PAC) on Carbon Steel and Aluminum				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.2.1 Explain the PAC process.	3	17	2	1.95
8.2.2 Determine the appropriate PAC settings for the various types of metals.	3	15	4	2.05
8.2.3 Perform safety inspections of PAC equipment and accessories.	2	15	5	2.14
8.2.4 Maintain PAC equipment and accessories.	2	17	3	2.05
8.2.5 Set up for PAC operations.	2	15	5	2.14
8.2.6 Operate PAC equipment.	1	16	5	2.18
8.2.7 Perform straight, square edge cutting operations in the flat position.	3	14	5	2.09
8.2.8 Perform shape, square edge cutting operations in the flat position.	3	14	5	2.09
Answered				22
Skipped				2

Performance Standard 8.3: Demonstrate Manual Air Carbon Arc Cutting (CAC-A)				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.3.1 Performs safety inspections of manual CAC-A equipment and accessories.	7	12	3	1.82
8.3.2 Maintain CAC-A equipment and accessories.	7	14	1	1.73
8.3.3 Set up manual CAC-A scarfing and gouging operation on carbon steel.	7	14	1	1.73
8.3.4 Operate manual CAC-A equipment on carbon steel.	7	14	1	1.73
8.3.5 Perform scarfing and gouging operations to remove base and weld metal in the flat and horizontal positions on carbon steel.	8	13	1	1.68
Answered				22
Skipped				2

CONTENT STANDARD 9.0: IDENTIFY WELDING CODES, INSPECTIONS, AND TESTING PRINCIPLES				
Performance Standard 9.1: Identify Welding Codes, Qualifications, and Certifications				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.1.1 Identify and explain weld imperfections and their causes.	3	15	4	2.05
9.1.2 Identify and explain welder qualification tests.	7	12	3	1.82
9.1.3 Explain the importance of quality workmanship.	0	13	9	2.41
9.1.4 Identify common destructive testing methods.	9	10	3	1.73
9.1.5 Perform a visual inspection of fillet welds.	1	15	6	2.23
Answered				22
Skipped				2

Performance Standard 9.2: Demonstrate Welding Inspection and Testing Principles				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.2.1 Define the role of welding inspection/inspector and testing in industry.	10	9	3	1.68
9.2.2 Examine cut surfaces and edges of prepared base metal parts.	6	12	4	1.91
9.2.3 Examine tack, root passes, intermediate layers, and completed welds.	4	12	6	2.09
Answered				22
Skipped				2

CONTENT STANDARD 10.0: APPLY FABIRACTION FUNDAMENTALS				
Performance Standard 10.1: Utilize Base Metal Preperation Fundamentals				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.1.1 Clean base metal for welding or cutting.	0	13	9	2.41
10.1.2 Identify and explain joint design.	3	12	7	2.18
10.1.3 Select the proper joint design based on a welding procedure specification (WPS) or instructor's direction.	2	12	8	2.27
10.1.4 Mechanically bevel the edge of a mild steel plate (e.g., hand beveller, grinder).	1	13	8	2.32
10.1.5 Thermally bevel the end of a mild steel plate.	2	15	5	2.14
Answered				22
Skipped				2

Performance Standard 10.2: Demonstrate Fabrication Techniques				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.2.1 Demonstrate proper setup of fabrication area, equipment, and materials.	2	11	9	2.32
10.2.2 Construct projects in the proper sequence.	2	10	10	2.36
10.2.3 Properly layout projects from welding prints.	1	11	9	2.38
10.2.4 Check work for accuracy.	0	13	9	2.41
Answered				22
Skipped				2