

**Guide  
for the Training of  
Welding Personnel:  
Level I—Entry  
Welder**



**American Welding Society**

# **Guide for the Training of Welding Personnel: Level I— Entry Welder**

**Supersedes EG2.0-95  
Revision Nov. 2008**

Prepared by the  
American Welding Society (AWS) Committee on SENSE  
AWS Committee on Education

Approved by the  
AWS Board of Directors

## **Abstract**

This guide contains information to assist education and training organizations in the development and administration of a modular, competency-based training that leads to the qualification and certification of a trainee in accordance with the requirements of AWS QC10, Specification for Qualification and Certification of Level I—Entry Welder.



**American Welding Society**

550 N.W. LeJeune Road, Miami, FL 33126

International Standard Book Number: 978-0-87171-670-5  
American Welding Society  
550 N.W. LeJeune Road, Miami, FL 33126  
© 2008 by American Welding Society  
All rights reserved  
Printed in the United States of America

Photocopy Rights. No portion of this standard may be reproduced, stored in a retrieval system, or transmitted in any form, including mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner.

Authorization to photocopy items for internal, personal, or educational classroom use only or the internal, personal, or educational classroom use only of specific clients is granted by the American Welding Society provided that the appropriate fee is paid to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, tel: (978) 750-8400; Internet: <[www.copyright.com](http://www.copyright.com)>.

# Foreword

This foreword is not a part of AWS EG2.0-2008 *Guide for the Training of Welding Personnel: Level I—Entry Welder*, but is included for informational purposes only.

The American Welding Society (AWS), recognizing the need for competent welders, through a grant by the U.S. Department of Education, formed the Education Grant Committee in 1992 and assigned them the task of preparing the initial guide.

Welding has become a very sophisticated and technical science, requiring not only mental application but also hands-on abilities. The future need for competent welders should prompt the establishment of a greater number of educational programs. Thus, it becomes imperative that training adequately prepares individuals for industrial assignments at various levels of skill development.

To this end the Level I—Entry Welder needs to enter the workforce possessing a prerequisite amount of knowledge, attitude, skills and habits required to perform routine, predictable, repetitive, and procedural tasks involving motor skills, and limited theoretical knowledge while working under close supervision.

As the name implies, it is the intent of this Guide to establish, expand, or enhance a private or public training program for Level I—Entry Welder. The guidelines contained in this document are based on AWS QC10: *Specification for the Qualification and Certification of Level I—Entry Welder*. AWS QC10 and EG2.0 were developed according to the DACUM method, and are based on the results of a national survey to identify requisite entry welder skills and knowledge. Survey participants included individuals from a wide range of business, industrial and educational areas.

Therefore, this document represents the AWS Education Grant Committee's consensus on the minimum requirements for a Level I—Entry Welder as specified by industry, and establishes the guidelines necessary to standardize the training and qualification of Level I—Entry Welder on a national basis.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to: The American Welding Society, Attention: Managing Director of Education, 550 N.W. LeJeune Road, Miami, FL 33126.

# Table of Contents

	Page No.
<i>Personnel</i> .....	v
<i>Foreword</i> .....	vii
<i>List of Drawings</i> ... ..	x
<b>1. General Provisions</b> .....	<b>1</b>
1.1 Scope... ..	1
1.2 Objectives ... ..	1
1.3 Implementation ... ..	1
<b>2. Industrial Awareness</b> ... ..	<b>2</b>
2.1 Scope... ..	2
2.2 Entry Welder Definition ... ..	2
2.3 Entry Welder Occupational Description... ..	2
2.4 Level I—Entry Welder Occupational Conditions ... ..	4
<b>3. Guidelines</b> ... ..	<b>5</b>
3.1 General Guidelines ... ..	5
3.2 Recommended Modular Competency-Based Outline-Based on Program Structure QC-10, Table 1 ... ..	6
3.3 Recommended Modular Guidelines for Entry Welder Training... ..	11
<b>Annexes</b>	
A—Recommendations for Support Personnel and Systems .....	117
B—Recommendations for the Trainee Population... ..	121
C—Recommendations for Facility Planning... ..	123
D—Recommendations for Personal and Shop Material, Equipment and Tools .....	129
E—Training Achievement Record .....	137
F—Reference Materials... ..	147

## List of Drawings

<b>Drawing No.</b>	<b>Description</b>	<b>Page No.</b>
AWS EDU-1	FCAW-S & FCAW-G/GM Performance Qualification .....	111
AWS EDU-2	GMAW (Spray Transfer) Performance Qualification .....	112
AWS EDU-3	GMAW-S & GTAW-Carbon Steel Performance Qualification .....	113
AWS EDU-4	GTAW-Austenitic Stainless Steel Performance Qualification.....	114
AWS EDU-5	GTAW-Aluminum Performance Qualification .....	115
AWS EDU-6	SMAW Performance Qualification—Test Plates.....	116

# 1. General Provisions

**1.1 Scope.** EG2.0 establishes a skill standard by defining the recommended minimum welder training requirements for a Level I—Entry Welder in accordance with AWS QC10: *Specification for Qualification and Certification of Level I—Entry Welder*.

This guide is intended to specify a credible path for training organizations to implement new welding programs or to enhance existing programs to administer Level I—Entry Welder training.

Use of this Guide is voluntary. Training organizations desiring to register a trainee as an AWS SENSE certified Level I—Entry Welder, or to record completion of modules or units, shall consider these guidelines as the minimum specified under AWS QC10.

## 1.2 Objectives

**1.2.1** Provide training organizations with an industrial awareness of the occupational description, conditions, task listing, and profile that encompasses the job classification of Level I—Entry Welder.

**1.2.2** Establish a national consensus guidelines, based on an industry-wide survey of skills needed in industry, detailing the minimum acceptable skill requirements for the training of a Level I—Entry Welder.

**1.2.3** Provide training organizations with a list of *Key Indicators Objectives*, and *Modular Instructional Activities* necessary to accomplish Level I—Entry Welder training.

**1.2.4** Provide training organizations with a national consensus guideline with which to compare their own curriculum, evaluate third party curricula, or develop a new curriculum that is aligned with this national consensus modular SENSE guideline.

**1.2.5** Provide training organizations with AWS documents and standards to be used as a basis for evaluating or developing training materials.

**1.2.6** Provide training organizations participating in SENSE with information related to the administration of Level I—Entry Welder testing necessary to meet the requirements of AWS QC10.

## 1.3 Implementation

**1.3.1 Curriculum Comparison.** Each training organization's course of study should reflect the objectives and key indicators of this guide as outline in 3.2 *Modular Competency Based Program Outline* and detailed in 3.3 *Learning Modules*.

**1.3.2 Teaching Sequence.** The program sequence as outlined in 3.2 *Recommended Modular Competency Based Program Outline* and detailed in 3.3 *Recommended Modular Guidelines for Level I—Entry Welder Training* is a suggested or recommended sequence. It is not mandatory to teach a course of study following the sequence of AWS QC10, Table 1 *Level I—Entry Welder Program Structure*. The teaching sequence for each training organization's course of study should be that which the instructor, the organization or the state educational authority specifies or has found to be most suited to the capabilities of the trainees and meets the needs of the industry.

**1.3.3 Continuation of Trainees in Entry Welders Registration.** AWS QC10: Section 11 the *Registration of Entry Welders* indicates that trainees who have a record of completed arc welding process competency(s) they have three (3) years to complete the program after the registration of their last completed arc welding process competency.

**1.3.4 Budget.** Adequate financial resources should be provided to maintain and enhance the welding program. Primary funding is for all necessary equipment (power sources, filler materials, gases, power equipment, hand tools, etc.). Additional monies should be available to provide the materials necessary for adequate welding instruction. Budget resources should also be available for staff and faculty technical and professional development.

## 2. Industrial Awareness

**2.1 Scope.** Training organizations should understand the needs of industry and provide welder training programs that prepare students to fill these needs. This is difficult because of the diverse nature of the welding function, along with the fact that it varies from industry-to-industry and from company-to-company.

Recognizing this diversity, AWS conducted an industry-wide survey, covering a broad base of businesses, job classifications, and educational institutions, to gather and analyze data concerning the skills and knowledge that a Level I—Entry Welder should possess. From a needs assessment and analysis, a profile of the Level I—Entry Welder was developed. This profile identifies skill and knowledge areas common to all Level I—Entry Welders, regardless of their unique situation in industry. A copy of the Level—I Entry Welder Profile may be obtained by contacting AWS Education Services, 550 N.W. LeJeune Road, Miami, FL 33126.

The second step used to understand the function of a welder in industry, was to prepare a task analysis based on the Level I—Entry Welder profile. The results of this analysis included a definition (see 2.2), an occupational description (see 2.3), the occupational conditions (see 2.4) and a task listing sheet (see 2.5). The resulting information is considered common to all Level I—Entry Welders.

Upon completion of the task analysis, technical information topics, materials, equipment, and tools were identified. This information was then converted from occupational data to a guide with key indicators, objectives, evaluation criteria and instructional activities. The following sections include portions of the occupational data collected during the needs and task analysis phases of this project to help institutions increase their awareness of industry needs.

**2.2 Level I Entry Welder Definition.** An individual employed in this position is considered to possess a prerequisite amount of knowledge, attitude, skills and habits required to perform routine, predictable, repetitive, and procedural tasks involving motor skills, and limited theoretical knowledge while working under close supervision.

**2.3 Level I—Entry Welder Occupational Description.** The Level I—Entry Welder position is comprised of the following areas:

### 2.3.1 Common Work Assignments (Occupational Orientation)

1. Follow detailed verbal or written instructions given by an immediate supervisor to set up and carry out specific job assignments.

2. Perform general housekeeping duties to maintain workspace, equipment, and tool cleanliness.
3. Fill out, maintain, and submit a time card, or work assignment card, and other records as required by the employer or institution.
4. Follows safe practices in the performance of daily duties.

### **2.3.2 Safety and Health of Welders**

1. Wears applicable Personal Protective Equipment (PPE) while conducting, or in the vicinity of welding and cutting activities.
2. Follows procedures established using the concepts and requirements from NFPA and OSHA for “Hot Zone” management to ensure the safety of the work area and the general public.
3. Is aware of the dangers associated with welding and brazing fumes, and uses the best possible means of ventilation available for the capture of welding and brazing fumes as close to the source as possible.
4. Follows established procedures and policies for implementing of emergency action plans and for the use of safety equipment.
5. Performs fire safety inspections of the work area.
6. Follows established procedures and policies for working in confined areas.
7. Follows written instructions and precautions provided on applicable documentation for materials used in support of welding and cutting activities.
8. Is aware of the purpose of precautionary labels and Material Safety Data Sheets (MSDSs) and refers to them for materials used in support of welding and cutting activities.

### **2.3.3 Drawing and Welding Symbol Interpretation**

1. Prepares an applicable bill of materials.
2. Performs conversions of standard inch and metric measurements.
3. Prepares parts from simple sketches or drawings.
4. Prepares weld joints and performs welding operations using welding symbol information.

**2.3.4 Shielded Metal Arc Welding (SMAW).** Performs minor external repairs to equipment and accessories, and sets up and performs SMAW operations, making fillet and groove welds in all positions within a limited thickness range on carbon steel.

**2.3.5 Gas Metal Arc Welding (GMAW).** Performs minor external repairs to equipment and accessories, and sets up and performs:

1. Gas metal arc welding (short circuit transfer) operations, making fillet and groove welds in all positions within a limited thickness range on carbon steel.
2. Gas metal arc welding (spray transfer) operations, making fillet and groove welds in limited positions within a limited thickness range on carbon steel.