

EWF Guideline for EUROPEAN ADHESIVE BONDER



Minimum Requirements for the Education, Examination and Qualification



EWF-515r2-19/SV-01

**MINIMUM REQUIREMENTS FOR
QUALIFICATION AND EXAMINATION**

**EUROPEAN ADHESIVE BONDER
(EAB)**

**Guideline - General information for the public and organizations that im-
plement this qualification**

This is a reduced version; it is not the full Guideline

**For more information regarding the Qualifications System, the EWF Manage-
ment Team or the ANB should be contacted**
(see in the EWF site the ANB contacts)

Published by: EWF Management Team
Av. Prof. Dr. Cavaco Silva, 33
Taguspark – Apartado 023
P-2741-901 Porto Salvo
Portugal

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Phone: +351.21 5815200
E-mail: ewf@ewf.be
Website: www.ewf.be

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Section I: Minimum Requirements for the Education of European Adhesive Bonder

The use of this guideline is restricted to organizations approved by the Authorized Nominated Body (ANB). The section II of this guideline covers the examination and qualification of European Adhesive Bonders.

1. Introduction

This guideline for the European Education and training of Adhesive Bonders has been prepared, evaluated and formulated by Members of the Committee for Education and Training of EWF. It is designed to provide the basic core education in adhesive technology required for bonding personnel active in manual and or automated adhesive bonding processes. Additional training and/or experience may be required by the adhesive personnel beyond the basic core education to lead to qualification in the applicable job functions.

A European Adhesive Bonder can carry out bonding tasks, according to specific procedures. He or she is able to read and understand working instructions as well as production methods concerning bonded products. He or she has a basic understanding in the field of bonding technology.

The guideline covers the minimum requirements for education and training, agreed upon by all national welding and joining societies within the EWF, in terms of themes, keywords and times devoted to them. It will be revised periodically by the Committee to take into account any changes that may affect the "state of the art". Students having successfully completed this course of education will be expected being capable of applying adhesive technology as covered by this guideline. The subsequent Part II of this document covers the examination and qualification.

The contents are given in the following structure, although it may be appropriate to allocate some of the theoretical hours to practical skills training, depending on the core skills of the students:

Theoretical Education	Teaching hours
1. Fundamentals of Adhesion and Adhesives	1
2. Surface Treatment	4
3. The Main Families of Adhesives and Sealants	10
4. Construction and Design	0,5
5. Quality Control	1
6. Durability of Adhesively Bonded Joints	0,5
7. Benefits and Limitation of Adhesives	1
8. Health and Safety	1
Practical Education	
Practical Skills Training	15
Examination	6
Total	40

A teaching hour will contain at least 50 minutes of direct teaching time. It is not obligatory to follow exactly the order of the topics given in this guideline and choice in the arrangement of the syllabus is permitted.

In this syllabus, the workload (WL) is an estimation of the time learners typically need to achieve the defined learning outcomes. WL covers theoretical training and self-study, as well as the time devoted to practical training and examination.

Credit points are allocated to the Competence Unit and Qualification, where 1 credit equals to 25 hours of workload.

It is to be noted that the overall structure of the syllabus for all levels (EAE, EAS and EAB) is similar, but some items are not considered appropriate in the Education of EAB. The depth to which each topic is dealt with is indicated by the number of hours allocated to it in the guideline. This will be reflected in the scope and depth of the examination.

The course consists of theoretical training and practical training. Applicants must pass theoretical and practical exams. If these applicants want to be certificated as EAB; guest auditors permitted.

The theoretical education given to the students aims at a basic understanding of the appropriate bonding process and the materials behaviour including standards and safety regulations. The themes and keywords are given as 'scope' in the Competence Unit descriptions, together with the 'Objective' and the 'Learning Outcomes' defined in terms of 'Knowledge application', 'Practical application' and 'Competences'.

The practical training advised in this guideline will bring the students to the comprehensive skill, required for practical work in industry.

2. Routes to Qualification

Two distinct routes to gain the qualifications described in this document have been agreed:

1. The Standard Route;
2. Distance Learning Route.

The Standard Route

The Standard Route requires successful completion of EWF approved courses that are designed to meet all the requirements in this Guideline. This is the route (Path 1 in diagrams 1 and 2) recommended by EWF as offering the fastest, most comprehensive manner in which the syllabus may be covered.

Blended Learning Route

Blended Learning Route requires successful completion of EWF approved courses that are designed to meet all the requirements in this Guideline and specific requirements on the Blended Learning Guideline that shall be followed.

The teaching hours (Classroom, laboratory, practical training and demonstration) are the MINIMUM hours for the course, if a blended learning route is applicable.

EWF Qualification	Guideline	Minimum Hours classroom (*)	Applies to
EAB	EWF-515	40%	Excluding manufacturing case studies and practical skills training.

(*) Expressed as percentage over the total

3. Access conditions to the course

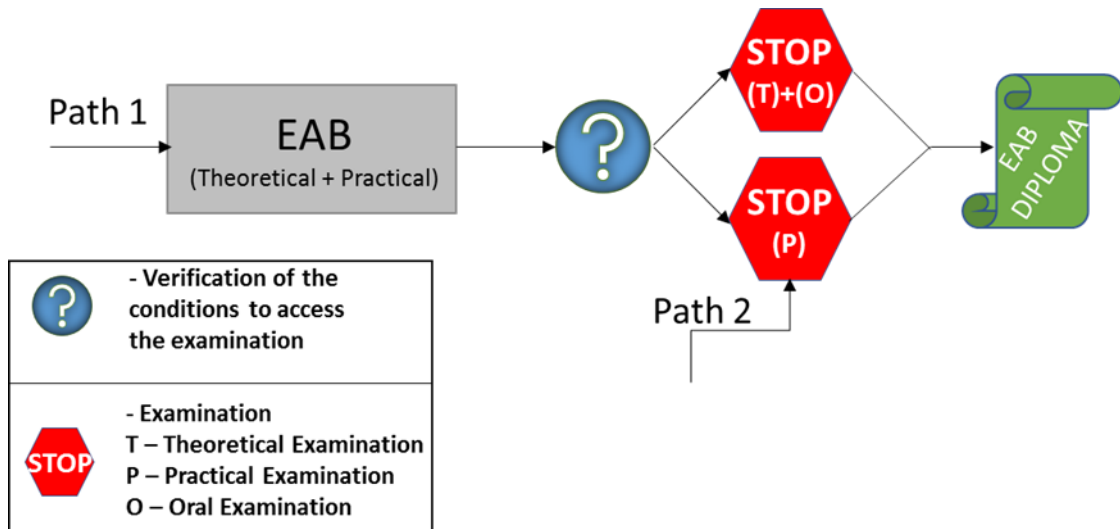
It is agreed that the entry to the European Adhesive Bonder Course requirements are (path 1):

- A minimum age of 16 is necessary;
- Basic skills in material processing are required otherwise a basic training is recommended.

The European Adhesive Engineer that wishes to obtain a Bonder Diploma must do the necessary practical exam (path 2). Practical training can be waived at the discretion of the ANB.

Course attendees and teachers shall have a good command of a common language so that they can successfully participate in instruction and take part in theoretical tests.

Routes and access of the aspirants will be like the next picture:



4. Syllabus
4a. Theoretical Training

QUALIFICATION	KNOWLEDGE	SKILLS	COMPETENCES	EQF LEVEL (EQF L)	WORKLOAD (WL)	TEACHING HOURS	ECVET POINTS
EUROPEAN ADHESIVE BONDER	Factual and theoretical knowledge (basic understanding) in the field of bonding technology.	Fundamental cognitive and practical skills required to read and understand working instructions as well as production methods concerning bonded products.	Will act as the responsible person for carrying out the own bonding tasks, according to specific procedures.	4	28,5	19	1

COMPETENCE UNIT 1- Fundamentals of adhesion and adhesives [GUIDELINE IAB 515r1-10 (2010) MODULE 1]

QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 –Apply concepts and fundamentals of adhesives technology	Demonstrating basic knowledge and skills about technical terms of adhesives technology	4
			ECVET POINTS
			-

COMPETENCE UNIT 1 – ASHESIVES AND SEALANTS

Subjects Title	Teaching Hours
	EAB
1.1 Fundamentals of adhesion and adhesives	1

UNIT 1	EAB
	MT
Teaching Hours	1
Student estimated workload (hours)	1,5

COMPETENCE UNIT 2. Surface Treatment			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 – Apply basic understanding of the purpose of surface treatment and establish the link with adhesion theories	Demonstrating fundamental knowledge and skills in outlining the purpose of surface treatment	4
	A2 – Apply basic understanding of different surface treatment methods including factors that influence quality.	Demonstrating fundamental knowledge and skills in implementing the different surface treatment methods	ECVET POINTS
			-

COMPETENCE UNIT 2 – SURFACE PREPARATION

Subjects Title	Teaching Hours
	EAB
2.1 Important Adherend Properties	1
2.2 Different Surface Treatment Methods	2,5

UNIT 2	EAB
	MT
Teaching Hours	4
Student estimated workload (hours)	6

COMPETENCE UNIT 3- The Main Families of Adhesives and Sealants [GUIDELINE IAB 515r1-10 (2010) MODULE 3]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL
EUROPEAN ADHESIVE BONDER	A1- Apply principles of the adhesive types, their processing requirements and storage constraints	Demonstrating basic knowledge and skills in defining the principles of the adhesive types, their processing requirements and storage constraints	4
			ECVET POINTS
			-

COMPETENCE UNIT 3 – THE MAIN FAMILIES OF ADHESIVES AND SEALANTS

Subjects Title	Teaching Hours
	EAB
3.1-The Main Families of Adhesives and Sealants	10

UNIT 3	EAB
	MT
Teaching Hours	10
Student estimated workload (hours)	15

COMPETENCE UNIT 4 - Construction and Design [GUIDELINE IAB 515r1-10 (2010) MODULE 4]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 – Identify the main considerations unique to adhesive bonding, following basic principles and illustrating common joint geometries.	Demonstrating fundamental knowledge and skills in applying the basic design principles of adhesive joints during the manufacture of adhesive joints.	4
		Demonstrating fundamental knowledge and skills in identifying some of the most important joint designs and in applying these configurations during the manufacture of adhesive joints.	ECVET POINTS
	A2 -Identify the main factors that influence joint strength.	Demonstrating fundamental knowledge and skills in understanding the main factor that influence joint strength	-

COMPETENCE UNIT 4 –CONSTRUCTION AND DESIGN

Subjects Title	Teaching Hours
	EAB
4.1 Construction and design of adhesive joints	0,5

UNIT 4	EAB
	MT
Teaching Hours	0,5
Student estimated workload (hours)	0,75

COMPETENCE UNIT 5 – Quality Control [GUIDELINE IAB 515r1-10 (2010) MODULE 5]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 – Apply basic understanding regarding the use of quality control techniques applied to bonded structures.	Demonstrating fundamental knowledge and skills in applying destructive and non-destructive testing in bonded structures.	4
			ECVET POINTS
			-

COMPETENCE UNIT 5 – QUALITY CONTROL

Subjects Title	Teaching Hours
	EAB
5.1 Quality Control of Bonded Structures	1

UNIT 5	EAB
	MT
Teaching Hours	1
Student estimated workload (hours)	1,5

COMPETENCE UNIT 6. Durability of Adhesively Bonded Joints [GUIDELINE IAB 515r1-10 (2010) MODULE 6]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 – Apply basic understanding regarding the external factors on bonded joints	Demonstrating basic knowledge and skills, being able to point out durability factors (at least identifying: moisture, chemical, mechanical thermal and weathering influences on bonded joints).	4
		Demonstrating basic knowledge and skills being able to point out weathering and ageing effects on bonded joints.	ECVET POINTS
		Demonstrating basic knowledge and skills being able to identify combined effects temperature-moisture-mechanical stress on bonded joints.	-

COMPETENCE UNIT 6 – DURABILITY OF ADHESIVELY BONDED JOINTS

Subjects Title	Teaching Hours
	EAB
6.1 Durability of Adhesively Bonded Joints	0,5

UNIT 6	EAB
	MT
Teaching Hours	0,5
Student estimated workload (hours)	0,75

COMPETENCE UNIT 7. Benefits and limits of adhesives [GUIDELINE IAB 515r1-10 (2010) MODULE 7]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL
EUROPEAN ADHESIVE BONDER	A1 – Apply basic understanding in listing the advantages and disadvantages of bonds	Demonstrating basic knowledge and skills about the advantages and disadvantages of adhesive technology in the different application areas compared with other technologies	4
		Demonstrating basic theoretical knowledge and skills about <ul style="list-style-type: none"> the thermal load capacity, the behaviour of the adhesive over longer periods of time, possible test procedures, repair dismantling and disposal 	ECVET POINTS
	A2 - Apply basic understanding of the limits of a bonding process		-

COMPETENCE UNIT 7 – BENEFITS AND LIMITS OF ADHESIVES

Subjects Title	Teaching Hours
	EAB
7.1 Benefits and Limits	1

UNIT 7	EAB
	MT
Teaching Hours	1
Student estimated workload (hours)	1,5

COMPETENCE UNIT 8. – HEALTH AND SAFETY [GUIDELINE IAB 515r1-10 (2010) MODULE 8]			
QUALIFICATION	ACTIONS / ACHIEVEMENTS	PERFORMANCE CRITERIA	EQF LEVEL (EQF L)
EUROPEAN ADHESIVE BONDER	A1 - Make use of adhesives	Demonstrating basic knowledge and skills in naming the health and safety hazards and regulations associated with the specific process that is being used	4
		Demonstrating basic knowledge and skills in respecting safety procedures during surface preparation, application and curing in the specific process that is being used	
		Demonstrating basic knowledge and skills of environmental protection aspects, including waste disposal rules and regulations	
		Demonstrating basic knowledge and skills when using techniques to minimise the risks associated to the specific bonding operation that is taking place	ECVET POINTS
		Demonstrating basic knowledge and skills in naming the standards, national and international regulations that apply in that specific bonding operation	-

COMPETENCE UNIT 8 – HEALTH AND SAFETY

Subjects Title	Teaching Hours
	EAB
8.1 Health and Safety	1

UNIT 8	EAB
	MT
Teaching Hours	1
Student estimated workload (hours)	1,5

4b. Practical Training – Total 15 hours

PRACTICAL SKILLS TRAINING		EAB
A	<p>Surface Treatment of Substrates</p> <p>Practical experience of main surface treatment methods on different substrates. For each type of surface treatment, the influence of non-respect of the procedure on the quality of the joint will be demonstrated.</p> <p>First set of practical exercises (3b1) summarises the basic requirements.</p>	15 Hours
B	<p>Health and Safety</p> <p>The considerations on health and safety, storage conditions, disposal, workshop environment (temperature, humidity, cleanliness, etc.) and safety instructions will be highlighted [in accordance with Competence Unit 8].</p>	
C	<p>Use of Different Adhesives</p> <p>Storage conditions. Opening the pot Metering and mixing (for two part adhesives)</p> <p>Dispensing adhesives (with different viscosities, different “pot-life”, different forms), manually or with semi-automatic and automatic equipment such as pneumatic guns and cartridges.</p> <p>Realisation of test specimens (single lap-shear, peel specimens with different types of adhesives including the calibration of the bond-line thickness, the curing process). For each type of adhesive used, the influence of not following the correct procedures (metering, mixing, and curing) on the quality of the joint will be demonstrated.</p> <p>Second set of practical exercises (3b2) summarises the basic requirements.</p>	
D	<p>Quality Control of Joints/Testing</p> <p>Practical experience of the different methods described for the quality control of the joint (at the different stages of the process) [as defined in Competence Unit 5]. The bonded joints produced will be tested destructively. Visual assessment and physical measurement of joint features (e.g. Dimensional control and inspection for voids and other external defects, such as lack of adhesive).</p> <p>Third set of practical exercises (3b3) summarises the basic requirements.</p>	

PRACTICAL TRAINING EXERCISES

Practical exercises	EAB
	Hours
3b1 - Surface Pre-treatment of Substrates	5
3b2 – Use of Different Adhesive Systems	5
3b3 - Quality Control of Joints/Testing	5
TOTAL	15