



Intellectual Output 2

European Adhesive Bonder Profile Curricula

- Short Version -



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

For more information regarding the Qualifications System, the IAB/EFW Combined Secretariat or the National ANB should be contacted
(see in the IIW and EWF sites the ANB contacts)



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EWF Guideline

EUROPEAN ADHESIVE BONDER

Minimum Requirements for the Education, Examination and Qualification

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.

ANB is accredited according to EN ISO/CEI 17024

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 the EWF. It is designed to provide the basic core education in adhesive technology required for a number of adhesive personnel being active in job functions such as foreman, instruction, technical sales etc. It is possible that 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 has industrial experience and 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 which 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.

Theoretical Education	Teaching hours
1. Fundamentals of Adhesion and Adhesives	1
2. Surface Preparation Before Adhesive Bonding	4
3. The Main Families of Adhesives and Sealants	10
4. Construction and Design	1
5. Quality Control	3
6. Durability of Adhesively Bonded Joints	1
7. Benefits and Limitation of Adhesives	1
8. Health and Safety	1
Practical Education	
Practical Skills Training	18
Examination	6
Total	46

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.

The theoretical education given to the students aims at a basic understanding of the appropriate bonding process and the materials behavior 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. Access conditions to the course

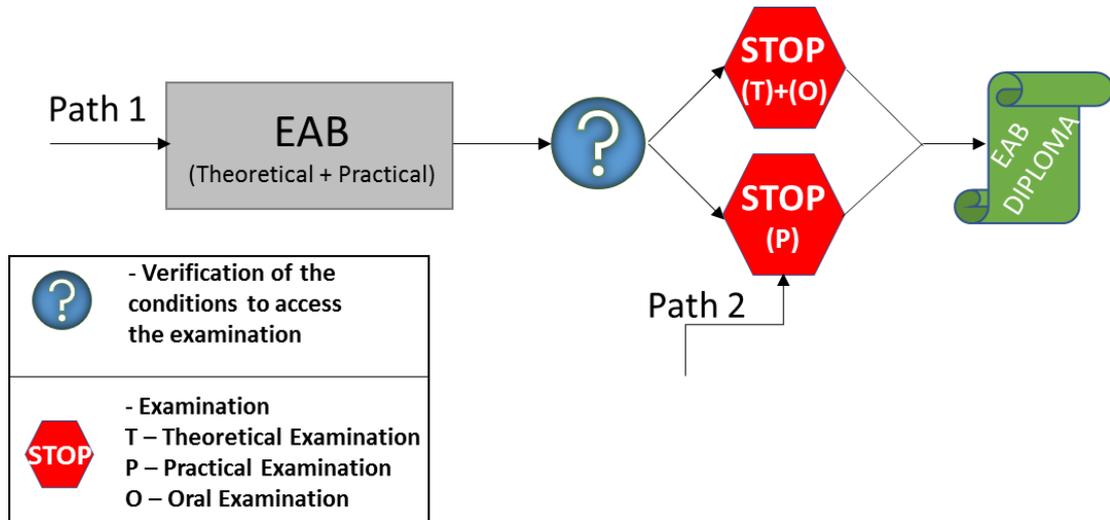
It is agreed that the entry to the European Adhesive Bonder Course requirements are (path 1):

- a minimum age of 16 is necessary
- basic skills in material processing are required otherwise a basic training is recommended
- sufficient knowledge or education in bonding,
- sufficient as language understanding to follow the course and pass examination.

The European Adhesive Engineer that wish 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:





3. Syllabus

3a. 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	57	22	2

COMPETENCE UNIT	SUBJECT TITLE	QUALIFICATION LEVEL (TRAINING HOURS)
1 FUNDAMENTALS OF ADHESION AND ADHESIVES	Fundamentals of adhesion and adhesives	1
2.SURFACE PREPARATION BEFORE ADHESIVE BONDING	Important Adherend Properties	1,5
	Different Surface Preparations of Materials	2,5
3THE MAIN FAMILIES OF ADHESIVES AND SEALANTS	The Main Families of Adhesives and Sealants	10
4 CONSTRUCTION AND DESIGN	Construction and design of adhesive joints	1
5 QUALITY CONTROL	Quality Control of Bonded Structures	3
6 DURABILITY OF ADHESIVELY BONDED JOINTS	Durability of Adhesively Bonded Joints	1
7 BENEFITS AND LIMITATION OF ADHESIVES	Benefits and disadvantages	1
8 HEALTH AND SAFETY	Limits	0
	Health and Safety	1



3b. Practical Training – Total 18 hours

PRACTICAL SKILLS TRAINING			EAB
A	Surface Pre-treatment of Substrates	<p>Practical experience of each main surface pre-treatment type on different substrates [as defined in subject 2.2]. For each type of surface pre-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>	18 Hours
B	Health and Safety	<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	Use of Different Adhesives	<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, curing) on the quality of the joint will be demonstrated.</p> <p>Second set of practical exercises (3b2) summarises the basic requirements.</p>	
D	Quality Control of Joints/Testing	<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 on the second day will be tested destructively. Visual assessment and physical measurement of joint features (eg. 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>	



3b. 1 – First set of practical exercises

Practical Exercises - Surface Pre-treatment of Substrates					
No. of exercise	Hours	Type of Joint	Examples of Surface Preparation	Adhesives	Remarks
1	2 ½	Lap joint	Degrease, grit blast, degrease Primers	2 Part Cold Cure: To be decided by the organisation in collaboration with the trainer	A representative cross section of joint types, surface preparation in conjunction with an appropriate adhesive shall be used to assess the candidate. Ensure that laboratory training and reduction to practice in industry are concordant.
2	2 ½	Peel joints e.g. bead peel test	Chemical Treatments (where appropriate) Physical treatments		
3	1	Preparation for Examination			
Total	6				



3b. 2 – Second set of practical exercises

Practical Exercises - Use of Different Adhesive Systems					
No. of exercise	Hours	Type of Joint	Surface Preparation	Adhesives	Remarks
1	2	Lap joint	Degrease, grit blast, degrease	<p>A compulsory core of adhesives shall be used: 2 part cold cure epoxy; 1 part moisture cure PU.</p> <p>Plus a selection from the following to meet the needs of the organisation:</p> <p>Acrylic Anaerobic Cyanoacrylate</p>	A representative cross section of joint types, adhesive systems (including dispensing techniques) shall be used to assess the candidate.
2	2	Peel Specimen			
3	1	Thread locking			
4	1	Preparation for Examination			
Total	6				



3b. 3 – Third set of practical exercises

Practical Exercises - Quality Control of Joints/Testing			
No. of exercise	Hours	Test	Remarks
1	The balance of the specific hours shall be decided by the group in conjunction with the trainer	Adherend Prior to Bonding	Joints to meet consistent values
2		Adhesive (Reception & Storage)	
3		Cured adhesive	
4		NDT	
5	1	Preparation for Examination	
Total	6		

PRACTICAL TRAINING EXERCISES

Practical exercises	EAB
	Hours
3b1 - Surface Pre-treatment of Substrates	6
3b2 – Use of Different Adhesive Systems	6
3b3 - Quality Control of Joints/Testing	6
TOTAL	18



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