EWF Guideline
EUROPEAN ADHESIVE SPECIALIST

Minimum Requirements for the Education, Examination and Qualification

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MINIMUM REQUIREMENTS FOR THE EDUCATION, TRAINING, EXAMINATION, AND QUALIFICATION OF PERSONNEL

EUROPEAN ADHESIVE SPECIALISTS (EAS)

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

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

GUIDELINE OF THE EUROPEAN FEDERATION FOR WELDING, CUTTING AND JOINING - EWF

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Minimum Requirements for the Education, Examination and Qualification of European Adhesive Specialists

Table of Contents

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

The use of this guideline is restricted to organisations approved by the Authorised National Body (ANB). The section II of this guideline covers the examination and qualification of European Adhesive Specialists.

Introduction

This guideline for the European education and training of European Adhesive Specialists 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 inspection, supervision, foremanship, 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. Additional training programmes will be established as required. The comprehensive work has been funded by the EU in the frame of the Leonardo Da Vinci programme.

The specialist will write and explain working instructions for the bonder in theory and practice. He will instruct and supervise practitioners. He will control process parameters, with responsibility for inspection and identification of problems.

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 effect the "state of the art". Students having successfully completed this course of education will be expected of being capable of applying adhesive technology as covered by this guideline. A subsequent document covers the examination and certification.

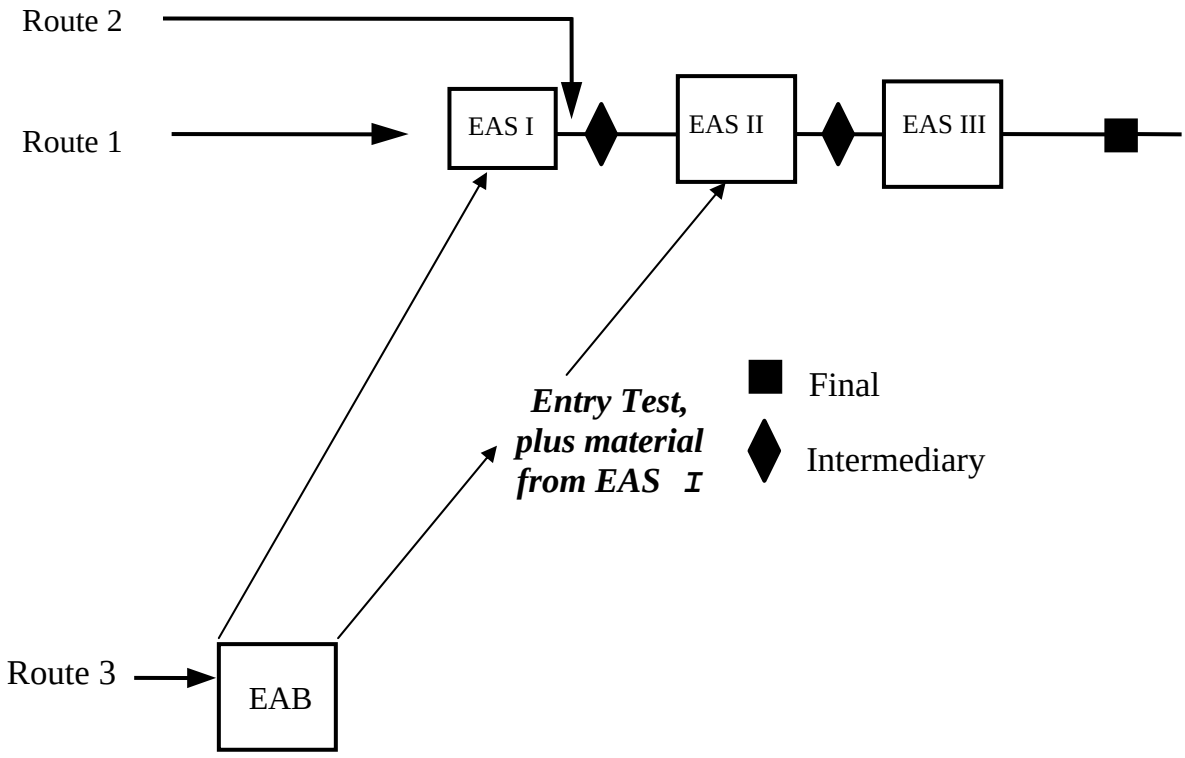
The contents are given in the following structure:

Theoretical Education	Teaching Hours
1. Adhesion and Adhesives	14
2. Materials as Adherends	14
3. Construction and Design	12
4. Durability	8
5. Bonding Process	11
6. Testing and Analysis	12
7. Health and Safety	4
8. Quality Management	7
9. Manufacturing Case Studies	8
10. Practical Skills Training	22
11. Examination	8
Total	120

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.

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. 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.

For entry to the programme 3 routes are available



Route 1 and 2:

For the access to the module EAS part I, the minimum requirements are:

specific technical qualification, the national definitions are given in Appendix 1 and a minimum age of 20 years including 2 years of job related experience.

In case of cooperation arrangements eg. with technical colleges, according to which basic parts of the course EAS part I are given under careful control of the ANB, before the participant complies with the access conditions, the access may be according to the route 2 indicated in the graph.

Route 3

For access to the module EAS part 0 the minimum requirements are

EAB qualification

or

qualification of a professional worker (with certificate after examination) in material processing profession and a minimum of three years experience in adhesive related activities, and a minimum age of 22 years, national definitions are given in Appendix 0.

Students who enter from the Bonder or professional worker (Route 3) must pass an entry test. Those who feel they lack the necessary basic technical education may take the preparatory EAS part 0 course before the test. If a student fails in the entry test he must take the full EAS part 0 course before the next test.

The amount of lecture hours which are recommended to be included in EAS are given in the following definition of the theoretical education. The definition of the precise syllabus of Part I is the responsibility of the ANB.

The rules for the conduct of the final examination by the ANB are prescribed under Examination and Qualification in this guideline. The intermediate examination is mandatory and it is the responsibility of the training school to ensure that all participants have achieved the required knowledge. Failure in the intermediate examination will require the student to repeat the examination.

Applicants not fulfilling the access conditions may follow the course as guests, but entry to EAS examination is not permitted.

In addition, the lectures of the EAS Part I are suitable for being taught as long distance learning programmes.

Theoretical Education EAS 0 **24 hours + Exam**

1. Introduction

2. Units

3. Technical Calculation

4. Technical Drawing

5. Basics of Chemistry

6. Basics of Materials

7. Mechanical Engineering

8. Calculation of strength

9. Joining

Appendix 0

National definitions for the minimum requirements for access to the Adhesive Specialist education and examination via route 3 defined before, can be consulted through the ANB

Theoretical Education - EAS

Theoretical and Practical Education,
(Only the main Syllabus Themes)

1.	**Adhesion and adhesives**	**14 Hours**
1.1	Introduction	
1.2	Adhesives & Sealants	
2.	**Materials as adherends**	**14 Hours**
2.1	Important Adherend Properties	
2.2	Purpose of the Surface Treatment (Key Surface Features)	
2.3	Types of Surface Pretreatment	
2.4	Selection of Surface Pretreatment and Surface Pretreatment Facilities	
2.5	Surface Pretreatment Facilities	
2.6	Wettability	
3.	**Construction & Design**	**12 Hours**
3.1	Fundamentals of the Strength of Materials	
3.2	Basics of Adhesive Bonding Design	
3.3	Joint Design	
3.4	Hybrid Joints	
3.5	Design Considerations for Durability of Joints (Long Term Performance)	
3.6	Manufacturing Considerations	

4. Durability **8 Hours**

4.1 Introduction

4.2 Thermal Effects on Adhesive Joints

4.3 Moisture Effects on Adhesive Joints

4.4 Chemical Effects on Adhesive Joints

4.5 Mechanical Stress Effects on Adhesive Joint Durability

4.6 Combined Temperature - Moisture - Mechanical Stress Effects on Adhesive Joints

4.7 Weathering and Ageing Effects on Adhesive Joints

4.8 Durability Assessment and Life Prediction for Adhesive Joints

5. The bonding process **11 Hours**

5.1 Introduction to the Bonding Process

5.2 Sourcing and Storing Adhesives

5.3 Preparation of the Adhesive

5.4 Adhesive Application

5.5 Assembly

5.6 Pressure

5.7 Jigs and Fixtures

5.8 Adhesive Curing

5.9 Repair

5.10 Automation and Robotics

5.11 Factory Layout (Including Economic Aspects)

5.12 Bonding Coordination (Equivalent to EN ISO 14731)

6.	**Testing and analysis**	**12 Hours**
6.1	Standard Test Methods and Others	
6.2	Property Determination for Adhesive, Adherend or Joint	
6.3	Characterisation of Raw Material	
6.4	Characterisation of Cured Adhesive	
6.5	Mechanical Properties of the Assembly	
6.6	Performance in Service	
6.7	Non-Destructive Testing	
6.8	Examination of Joint Fracture Surfaces and Adhesive Layer	
7.	**Health & Safety**	**4 Hours**
7.1	Selection Tables and Performance Specifications	
7.2	Data Section	
7.3	National Rules and Regulations	
8.	**Quality management**	**7 Hours**
8.1	Introduction - The Adhesive Bonding Process	
8.2	Raw Materials Control	
8.3	Process Control	
8.4	End-product Control	
8.5	Available Quality Tools and Techniques	

9.	**Manufacturing case studies**	**8 hours**
9.1	Industrial Case Studies	
9.2	Group Exercises	
10.	**Practical skills exercises**	**22 hours**
10.1	Surface Preparation of Adherends	
10.2	Use of Different Adhesives	
10.3	Use of Adhesive Application Equipment	
10.4	Joint Types	
10.5	Manufacture of Bonded Joints with Different Materials	
10.6	Examination and Testing of Bonded Joints	
10.7	Practical Inspection Techniques	
11.	**Examination**	**8 hours**

Appendix 1

National definitions for the minimum requirements for the access to the Adhesive Specialist's education and examination via the route 1 defined before, can be consulted through the ANB