-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

GENERAL INFORMATION

-Module Number- **2131473** **-Session-1993-94**

-Superclass- **XE**

-Title- **SELECTION AND APPLICATION OF ADHESIVES AND BONDING AGENTS**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Understanding the different types and applications of adhesives.

OUTCOMES

1. select adhesives and material preparation procedures for identified applications prior to bonding;

2. prepare parent surfaces and material for joining;

3. join surfaces by the use of adhesive bonding agents;

4. identify operational faults and methods of rectification;

5. state the appropriate adhesive storage and disposal conditions and regulations.

CREDIT VALUE: 1 NC Credit

ACCESS STATEMENT: Access is at the discretion of the centre.

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

This specification is distributed free to all approved centres. Additional copies may be purchased from SQA (Sales and Despatch section) at a cost of £1.50 (minimum order £5).

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

STATEMENT OF STANDARDS

UNIT NUMBER: 2131473

UNIT TITLE: SELECTION AND APPLICATION OF ADHESIVES AND BONDING AGENTS

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. SELECT ADHESIVES AND MATERIAL PREPARATION PROCEDURES FOR IDENTIFIED APPLICATIONS PRIOR TO BONDING

PERFORMANCE CRITERIA

(a) Identification of adhesive joint design criteria is correct in terms of the given situation.
(b) The selection of an appropriate adhesive is suitable for the given situation.
(c) The factors affecting good adhesive bonding are correct.

RANGE STATEMENT

Materials: rubbers; plastics; metals; fabrics and textiles; timber; leather; painted surfaces; glazed surfaces.

Adhesives: anaerobics; cyanoacrylates; epoxies; hot melts; phenolics; plastisols; polyurethanes; rubber.

Loading: compression; shear; peel; cleavage.

EVIDENCE REQUIREMENTS

Oral and written evidence of the candidate's ability to meet all performance criteria covering all of the range statements.

OUTCOME

2. PREPARE PARENT SURFACES AND MATERIAL FOR JOINING

PERFORMANCE CRITERIA

(a) The pre-bonding preparation is correct in terms of the cleaning method.
(b) The pre-bonding preparation is correct in terms of the etching method.

RANGE STATEMENT

Materials: rubbers; plastics; metals; fabrics and textiles; timber; leather; painted surfaces; glazed surfaces.

Cleaning agents: detergents; solvents.

Etching methods: mechanical; chemical.

EVIDENCE REQUIREMENTS

Performance evidence of the candidate's ability to prepare material to the standard necessary to produce an acceptable bond.

Supplementary oral evidence to ensure the candidate covers all of the range.

OUTCOME

3. JOIN SURFACES BY THE USE OF ADHESIVE BONDING AGENTS

PERFORMANCE CRITERIA

(a) The joining procedure ensures correct alignment of the joint.
(b) The application of the adhesive is correct in accordance with manufacturer's recommendations.
(c) The holding time and cure conditions are maintained in accordance with manufacturer's recommendations.

RANGE STATEMENT

Alignment: datum lines; measurement; jigs.

Adhesives: anaerobics; cyanoacrylates; epoxies; hot melts; phenolics; plastisols; polyurethanes; rubber.

Equipment: clamping devices; temporary fixings; heaters.

EVIDENCE REQUIREMENTS

Performance evidence of the candidate's ability to manufacture a joint to required specifications.

Supplementary oral evidence to ensure the candidate covers all of the range.

OUTCOME

4. IDENTIFY OPERATIONAL FAULTS AND METHODS OF RECTIFICATION

PERFORMANCE CRITERIA

(a) Identification of operational faults is correct.
(b) Explanation of rectification methods and procedures is correct.

RANGE STATEMENT

Imperfections: low strength; misalignment.

Rectification methods: adhesive choice; joint design; holding method; holding time.

EVIDENCE REQUIREMENTS

Written evidence of the candidate's ability to identify three faults and explain their rectification.

OUTCOME

5. STATE THE APPROPRIATE ADHESIVE STORAGE AND DISPOSAL CONDITIONS AND REGULATIONS

PERFORMANCE CRITERIA

(a) Identification of appropriate storage conditions for adhesives is correct.
(b) Identification of methods of adhesive disposal is correct.
(c) Explanation of regulations appertaining to adhesive storage conditions is correct.
(d) Explanation of adhesive disposal regulations is correct.

RANGE STATEMENT

Regulations: manufacturer's recommendations; COSHH; HASAW; company procedures.

Adhesives: anaerobics; cyanoacrylates; expoxies; hot melts; phenolics; plastisols; polyurethanes; rubber.

EVIDENCE REQUIREMENTS

Oral and written evidence of the candidate's ability to meet all performance criteria, covering all the range statements.

ASSESSMENT RECORDS

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of Support Notes.

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

SUPPORT NOTES

UNIT NUMBER: 2131473

UNIT TITLE: SELECTION AND APPLICATION OF ADHESIVES AND BONDING AGENTS

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

On completion of this module, you will be able to select adhesives, prepare materials, perform bonding applications, identify and rectify faults along with being able to identify storage and disposal regulations.

CONTENT/CONTEXT Outcome 1 will require an explanation of the 8 basic adhesive types: anaerobics, cyanoacrylates, epoxies, phenolics, plastisols, polyurethanes, rubber adhesives and toughened variants. Also consideration should be given to parent surface requirements to allow good bonding for the above types.

Outcome 2 - candidates should know the appropriate methods of preparing surfaces to the desired requirements.

Outcome 3 - candidates should know good working practices and holding devices necessary to produce a successful bond.

Outcome 4 - will require explanation and example of typical operational faults, their causes and methods of avoidance or rectification.

Outcome 5 - candidates should be aware of Health and Safety regulations and use all necessary safe working practices, as well as the Control of Substances Hazardous to Health regulations along with manufacturer's recommended procedures.

APPROACHES TO GENERATING EVIDENCE Most of this module will be carried out with the candidate carrying out experimental bonds, and the role of the tutor/trainer will be that of providing guidance through these experiments, and it is envisaged that both individual and group work would assist good working practices.

The use of manufacturer's data sheets and procedures would enhance the candidate's awareness.

ASSESSMENT PROCEDURES Centres may use the Instruments of Assessment which are considered by the tutor/trainer to be the most appropriate. Examples of Instruments of Assessment could be:

Outcomes 1, 2, 3 and 4	Practical exercise of choosing an appropriate adhesive for three different applications, and a written report on each identifying three likely faults and how they would be treated.
Outcome 5	The candidate would be set six restricted response questions for performance criteria.

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guidelines for Module Writers.
2. SQA's National Standards for Assessment and Verification.
3. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
4. Procedures for special needs statements are set out in SQA's guide 'Students with Special Needs'.