

Overview

This standard identifies the competences you need to mould aircraft acrylics, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. You will be required to use appropriate manufacturing drawings, specifications and documentation to produce the various types of component. You will be expected to produce the acrylic components using the specified/appropriate moulding process and techniques. The equipment will include air-circulating ovens, presses, trimming and automated cutting equipment. The products produced will include deep drawn, double curvature and convex/concave shapes.

Your responsibilities will require you to comply with organisational policy and procedures for the manufacturing activities undertaken and to report any problems with the sheet moulding activities, materials or equipment that you cannot personally resolve, or that are outside your personal authority, to the relevant people. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying moulding procedures. You will understand the moulding procedures, and their application, and will know about the moulding equipment, materials, and consumables used, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out the moulding operations. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow the correct component drawing or any other related specifications for the component to be produced
3. determine what has to be done and how this will be achieved
4. obtain and prepare the appropriate tools, equipment and materials
5. carry out the moulding activities using the correct methods and techniques
6. produce components to the required specification
7. check that all the required operations have been completed to specification
8. deal promptly and effectively with problems within your control and report those that cannot be solved
9. complete the relevant documentation, in accordance with organisational requirements
10. leave the work area in a safe and appropriate condition on completion of the activities

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when working with acrylics (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
2. the health and safety requirements of the work area where you are carrying out the activities and the responsibility these requirements place on you
3. the protective equipment that you need to use for both personal protection (PPE) and where appropriate, protection of others
4. the hazards associated with moulding acrylic materials and with the tools and equipment used and how to minimise them and reduce any risks
5. the procedure for the safe disposal and correct separation of waste materials
6. the layout of the work area to give maximum throughput
7. the interpretation of drawings, standards, quality control procedures and specifications used for the moulding activity and how to carry out currency/issue checks on the documents you are working with
8. the principles of deep drawing, concave/convex moulding, positive pressure moulding and stress relieving
9. the different methods of heating materials and the temperature control methods
10. the sheet profiling procedures and material trimming methods/procedures
11. the supply of acrylic sheet (such as colour, thickness, sheet size, surface texture, material protection)
12. the use of forming aids
13. the methods of sheet trimming and sheet cleaning prior to moulding
14. the preparation methods and procedures applied to the moulding surface
15. the material cleaning methods and procedures to be applied
16. the procedures for de-moulding and first article inspection (such as test samples, non-destructive testing (NDT) requirements)
17. the quality control procedures to followed during the moulding operations
18. the procedures for ensuring that you have the correct tools and equipment
19. the methods and techniques for lifting, handling and supporting the components/equipment/materials during the moulding activities
20. recognition of moulding defects (such as misalignment, distortion, foreign object damage, contamination and surface defects)
21. the tools and equipment used in the moulding activities and their calibration,

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care, preparation and control procedures

22.

why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities

23.

the problems that can occur with the moulding operations and how these can be overcome

24. the recording documentation to be completed for the moulding activities undertaken and where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation

25. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1.

Carry out all of the following during the moulding activities:

- 1.1 obtain and use the appropriate documentation (such as job instructions, drawings, planning and quality control documentation, material data sheets, aircraft standards and specifications)
- 1.2 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
- 1.3 provide and maintain a safe working environment for the moulding activities
- 1.4 obtain the correct materials for the moulding operations (batch number, colour, thickness, sheet size, surface texture, correctly protected)
- 1.5 obtain the correct tools and equipment for the activity, and check that they are in a safe and usable condition (part marked, cleared inspection, undamaged)
- 1.6 follow safe practice/approved moulding techniques and procedures at all times
- 1.7 return all tools and equipment to the correct location on completion of the moulding activities
- 1.8 dispose of waste materials in accordance with approved procedures

2.

Carry out two of the following moulding methods and techniques:

- 2.1 vacuum moulding
- 2.2 deep drawing
- 2.3 shape clamping
- 2.4 positive pressure shaping
- 2.5 stress relieving

3.

Carry out all of the following operations during the moulding process:

- 3.1 tool/equipment preparation
- 3.2 stress relieving
- 3.3 setting and controlling temperatures
- 3.4 sheet forming
- 3.5 sheet preparation
- 3.6 de-moulding
- 3.7 trimming

4.

Produce a range of components with four of the following features:

- 4.1 box sections
- 4.2 concave shapes
- 4.3 cylindrical section
- 4.4 single curvatures
- 4.5 convex shapes
- 4.6 double curvatures

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5.

Produce components which comply with one of the following standards:

- 5.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
- 5.2 Ministry of Defence (MoD)
- 5.3 Military Aviation Authority (MAA)
- 5.4 Aerospace Quality Management Standards (AS)
- 5.5 Federal Aviation Authority (FAA)
- 5.6 BS, ISO or BSEN standards and procedures
- 5.7 customer standards and requirements
- 5.8 company standards and procedures
- 5.9 manufacturers standards and procedures

6.

Complete the relevant paperwork, to include one from the following and pass it to the appropriate people:

- 6.1 build records
- 6.2 job cards.
- 6.3 log cards
- 6.4 aircraft flight log
- 6.5 other specific recording method

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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