

Applying surface finishes to composite mouldings

Overview

This standard identifies the competences you need to apply surface finishes to composite mouldings (such as moulds, panels and components), in accordance with approved procedures. You will be required to use appropriate drawings, specifications and documentation to apply surface finishes, using the correct techniques.

You will apply finishes to composite mouldings using a range of techniques and processes. A variety of surface finishes will be applied to a range of resin and fibre materials.

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

Your underpinning knowledge will be sufficient to provide a good understanding of your work, and will provide an informed approach to applying finishing techniques and procedures to composite mouldings. You will have an understanding of the finishing techniques used, and their application, in adequate depth to provide a sound basis for carrying out the activities, recognising faults and ensuring the work output is to the required specification.

You will understand the safety precautions required when carrying out the finishing operations and when using the associated tools and equipment. 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:

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
- P2 ensure the material surfaces to be treated are suitably prepared for the finishing operations to be carried out
- P3 check that the finishing equipment and treatment solutions are set up and maintained at satisfactory operating conditions and levels
- P4 carry out the surface finishing process in accordance with operating procedures and the component specification requirements
- P5 ensure that the treated work piece achieves the required characteristics and meets the finishing specification
- P6 deal with problems within your control and report those that cannot be solved
- P7 dispose of waste materials in line with organisational and environmentally safe procedures
- P8 leave the finishing equipment in a safe condition on completion of the surface finishing activities

Knowledge and understanding

You need to know and understand:

- K1 how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
- K2 the importance of wearing the appropriate personal protective equipment (PPE), and of keeping the work area clean and tidy
- K3 the application of COSHH regulations in relation to the storage, use and disposal of composite materials and consumables
- K4 the specific environmental conditions that must be observed when applying surface treatments to composite mouldings
- K5 how to extract and use information from engineering drawings and related specifications in relation to work undertaken
- K6 quality procedures used in the workplace to ensure production control and the completion of appropriate documents
- K7 conventions and terminology used for applying finishes
- K8 different types of composite resin systems, fibres and reinforcements, and their merits
- K9 different finishes applied to composites, and their application
- K10 correct methods of storage, handling and disposal of finishing materials
- K11 methods of preparation for applying different finishes
- K12 the importance of having the correct mixing ratios when using surface treatments and the associated working times
- K13 methods of application for different finishes
- K14 issues that can occur during the finishing process, including defects
- K15 how defects can be overcome during the finishing activity
- K16 the tools and equipment used in the finishing activities, and their care, preparation and control procedures
- K17 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 finishing activities:
 - 1.1 obtain and use the appropriate documentation (such as job instructions, drawings, quality control documentation, material data sheets)
 - 1.2 adhere to procedures or systems in place for risk assessment, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.3 maintain a safe working environment for the composite surface treatment activities
 - 1.4 confirm that all tools and equipment to be used are in a safe and usable condition
 - 1.5 follow safe practice/approved composite surface treatment techniques and procedures at all times
 - 1.6 segregate and dispose of waste materials using the correct procedure
 - 1.7 return all tools and equipment to the correct location on completion of the surface treatment activities
 - 1.8 leave the work area in a safe and appropriate condition on completion of the activities
 - 1.9 complete relevant production documentation

2. Carry out three of the following activities when preparing for the surface finishing activity:
 - 2.1 check that mouldings are correct and complete
 - 2.2 check for any defects in the mouldings
 - 2.3 check that equipment is suitable for use
 - 2.4 check availability of ancillary materials required
 - 2.5 identify and protect the moulding in the work area

3. Apply finishes to composite mouldings, using one of the following techniques:
 - 3.1 cloth application
 - 3.2 brush
 - 3.3 spray
 - 3.4 laying films
 - 3.5 roller
 - 3.6 other to be specified

Applying surface finishes to composite mouldings

4. Prepare surfaces of composite mouldings, using one of the following methods:
 - 4.1 surface masks
 - 4.2 peep ply
 - 4.3 abrading
 - 4.4 abrasive blasting
 - 4.5 etching
 - 4.6 water cleaning
 - 4.7 solvent cleaning
 - 4.8 priming
 - 4.9 other to be specified

5. Apply two types of finish to composite mouldings from the following:
 - 5.1 surface sealers
 - 5.2 top coats
 - 5.3 UV coatings
 - 5.4 speciality coatings
 - 5.5 primers
 - 5.6 adhesive films
 - 5.7 heatproof coatings
 - 5.8 flexible coatings
 - 5.9 other to be specified

6. Apply finishes to composite mouldings, using one of the following:
 - 6.1 one-part finishes
 - 6.2 multiple coatings
 - 6.3 solvent based
 - 6.4 water based
 - 6.5 single coatings
 - 6.6 two-part finishes
 - 6.7 combination coats
 - 6.8 adhesive based
 - 6.9 other specific finish

7. Use two of the following consumable materials during the finishing operations:
 - 7.1 abrasives
 - 7.2 masking films
 - 7.3 thinners

Applying surface finishes to composite mouldings

- 7.4 stoppers
- 7.5 sealers
- 7.6 cutting compounds
- 7.7 masking tapes
- 7.8 polishes
- 7.9 solvents
- 7.10 fillers
- 7.11 primers
- 7.12 cleaning agents
- 7.13 other specific consumable

8. Apply finishes to composite mouldings which are suitable for one of the following resin types:

- 8.1 bio resin
- 8.2 thermoplastic
- 8.3 polyester
- 8.4 vinyl ester
- 8.5 epoxy
- 8.6 phenolic
- 8.7 bismaleimide
- 8.8 cyanate ester
- 8.9 other specific resin

9. Apply finishes to composite mouldings suitable for one of the following fibre types:

- 9.1 natural fibre
- 9.2 thermo plastic
- 9.3 glass
- 9.4 aramid
- 9.5 carbon
- 9.6 hybrid
- 9.7 other specific fibre

10. Apply finishes to a range of mouldings, which comply with one of the following standards:

- 10.1 BS, ISO or BSEN standards and procedures
- 10.2 organisational standards and procedures
- 10.3 customer standards and requirements

10.4 recognised compliance agency/body standards

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