

Applying finishes to composite mouldings

Overview

This standard identifies the competences you need to apply 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 finishes, using the correct techniques. You will apply finishes to composite mouldings using a range of techniques and processes. A variety of 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 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 provide a good understanding of your work, and will provide an informed approach to applying finishing techniques and procedures to composite mouldings. You will understand the finishing techniques used, and their application, in adequate depth to provide a sound basis for carrying out the activities, correcting 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.

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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. ensure the material surfaces to be treated are suitably prepared for the finishing operations to be carried out
3. check that the finishing equipment and treatment solutions are set up and maintained at satisfactory operating conditions and levels
4. apply finishes in accordance with operating procedures and the component specification requirements
5. ensure that the treated workpiece achieves the required characteristics and meets the finishing specification
6. complete and store all relevant documentation in accordance with organisational procedures
7. deal promptly and effectively with problems within your control and report those that cannot be solved
8. dispose of waste and excess materials in accordance with approved procedures
9. shut down and leave the finishing equipment in a safe condition on completion of the processing activities

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Knowledge and understanding

You need to know and understand:

1. the health and safety precautions to be taken and procedures used when working with composite materials, consumables, tools and equipment in the specific work area 2. the hazards associated with carrying out composite finishing activities, and with the composite materials, consumables, tools and equipment used, and how to minimise these and reduce any risks 3. the protective equipment (PPE) that is needed for personal protection and, where required, the protection of others 4. the specific workshop environmental conditions that must be observed when applying finishes to composite mouldings (such as temperature, humidity, styrene levels to threshold limits, fume/dust extraction systems and equipment) 5. how to extract and use information from engineering drawings, lay up manuals and related specifications (to include symbols and conventions to appropriate standards) in relation to work undertaken 6. the quality procedures used in the workplace to ensure production control (in relation to currency, issue, meeting specification) and the completion of such documents 7. the conventions and terminology used for applying finishes (such as surface keying, finish thickness, matt finish, gloss finish, treatment reactions) 8. different types of composite resin systems, fibres, reinforcements, and their applications 9. different finishes applied to composites, and their applications 10. correct methods of storage, handling and disposal of finishing materials 11. methods of preparation for applying different finishes 12. mixing ratios for two-part finishes, and the associated working times 13. methods of application for different finishes 14. the problems that can occur during the finishing process, including defects such as contamination 15. how defects can be overcome during the finishing activity 16. the tools and equipment used in finishing activities, and their care, preparation and control procedures 17. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

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Scope/range related to performance criteria

1. Carry out all of the following during the finishing activities: 1. obtain and use the appropriate documentation (such as job instructions, drawings, material data sheets, specifications, planning and quality control documentation) 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 3. provide and maintain a safe working environment for the composite finishing activities 4. obtain and check that all tools and equipment to be used are in a safe and usable condition 5. follow safe practice/approved composite finishing techniques and procedures at all times 6. segregate and dispose of waste materials in accordance with approved procedures 7. return all tools and equipment to the correct location on completion of the finishing activities 8. leave the work area in a safe and appropriate condition on completion of the activities

2. Carry out all of the following activities when preparing for the finishing activity: 1. check that mouldings are correct and complete 2. check for any defects in the mouldings 3. check availability of ancillary materials required 4. select the correct equipment for the activity 5. check that the equipment is suitable for use 6. identify and protect the moulding in the work area

3. Apply finishes to composite mouldings using two of the following techniques: 1. cloth application 2. brush 3. spray 4. laying films 5. roller 6. other specific technique

4. Prepare surfaces of composite mouldings using two of the following methods: 1. abrading 2. bead blasting 3. water cleaning 4. solvent cleaning 5. priming 6. other specific method

5. Apply two types of finish to composite mouldings from: 1. surface sealers 2. primers 3. top coats 4. adhesive films 5. UV coatings 6. heatproof coatings 7. flexible coatings 8. speciality coatings 9. other specific finish

6. Apply finishes to composite mouldings using three of the following: 1. one-part finishes 2. two-part finishes 3. single coatings 4. multiple coatings 5. combination coats 6. water based 7. solvent based 8. adhesive based 9. other specific method

7. Apply finishes to composite mouldings using four of the following consumable materials: 1. masking tapes 2. masking films 3. stoppers 4. fillers 5. sealers 6. primers 7. abrasives 8. cutting compounds 9. polishes 10. thinners 11. solvents 12. cleaning agents 13. other specific method

8. Apply finishes to composite mouldings suitable for two of the following resin types: 1. polyester 2. vinyl ester 3. epoxy 4. phenolic 5. bismaleimide 6. cyanate ester 7. other specific type

9. Apply finishes to composite mouldings suitable for two of the following fibre types: 1. polyethylene 2. glass 3. aramid 4. carbon 5. other specific type

10. Apply finishes to a range of mouldings in compliance with one of the following quality and accuracy standards: 1. customer standards and requirements 2. company standards and procedures 3. have an appropriate surface finish and are free from defects or surface blemishes

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Developed by	Enginuity
Version Number	3
Date Approved	30 Mar 2022
Indicative Review Date	31 Mar 2025
Validity	Current
Status	Original
Originating Organisation	Enginuity
Original URN	SEMCOMP319
Relevant Occupations	Engineering, Engineering and Manufacturing Technologies, Engineering Professionals, Science and Engineering Technicians
Suite	Composite Engineering Suite 3
Keywords	Engineering; produce; composite; mouldings; components; laminating; resin; fibre; assemblies; apply finishes; mark out; drawings