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## Overview

This standard identifies the competences you need to apply yacht or boat liquid surface coatings to various substrates, using manual spray guns, in accordance with approved procedures. You will be required to access the appropriate contractual and other specifications, to check that these are of the latest issue and to extract all necessary information in order to carry out the surface coating operations. You will be required to check that all surfaces to be coated have been prepared in accordance with the process specification and that any necessary exclusion, containment, masking, protection and ventilation requirements are implemented. You will be expected to select the appropriate and/or specified equipment and to ensure that it is correctly set up, maintained and adjusted. You will be expected to apply a variety of surface coatings in a number of boatyard environments.

Your responsibilities will require you to comply with organisational policy and procedures for the yacht or boat spray coating activities undertaken and to report any problems with these activities 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 carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying liquid surface coatings to yachts or boats using spray methods. You will understand the spraying procedures and techniques used and their application. You will know about the substrates, their preparation requirements, coating materials and their preparation requirements, in sufficient depth to provide a sound basis for carrying out the activities, correcting faults and for ensuring that the coated surfaces are to the required standards and to the customer's expectations.

You will understand the safety precautions required when carrying out the yacht or boat spray coating operations. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and to others in the workplace.

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### Performance criteria

*You must be able to:*

- P1 work safely at all times, complying with health and safety legislation, regulations, directives and other relevant 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 coatings are set up and maintained at satisfactory operating conditions and levels
- P4 carry out the treatment process in accordance with operating procedures and the component specification requirements
- P5 ensure that the treated workpiece achieves the required characteristics and meets the finishing specification
- P6 deal promptly and effectively with problems within your control and report those that cannot be solved
- P7 dispose of waste and excess materials in line with agreed organisational procedures
- P8 shut down the finishing equipment to a safe condition on completion of the processing activities

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### Knowledge and understanding

*You need to know and understand:*

- K1 the safe working practices and procedures to be observed when carrying out manual spray coating activities on yacht or boat components (such as general workshop and site safety, appropriate protective equipment, protecting other workers from the effects of the work, safety in enclosed/confined spaces, working at height, use of mobile elevated work platforms (MEWPs), use of atmospheric controls)
- K2 how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down of compartments in the case of fire or other major incident, first aid, fire fighting and resuscitation of personnel)
- K3 statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH (such as Approved Codes of Practice (ACOP), The Management of Health and Safety at Work Regulations, The Provision and use of Work Equipment Regulations, The Noise at Work Regulations, the Confined Space Regulations, The Special Waste Regulations, the Pollution Prevention and Control Regulations, The Water Resources Act)
- K4 the hazards associated with the storage of, the preparation of, and the disposal of yacht or boat coating products (including the information to be found in manufacturers' data sheets and in Chemical Hazard Information and Packaging for Supply (CHIPS) data sheets)
- K5 the requirements for working in confined spaces, and the importance of emergency procedures and safe systems of work (including permits to work, Required Air Quantities (RAQs) and local exhaust ventilation (LEV), to maintain safe conditions; the provision of adequate and safe lighting and avoidance of sources of ignition)
- K6 the personal protective equipment (PPE) to be worn during the spraying activity
- K7 the characteristics of and the applications for, yacht or boat coating products (including the use of manufacturers' data sheets, requirements for the application of particular coating systems and contractual specifications)
- K8 how to carry out currency/issue checks of the specifications you are working with
- K9 the need to ensure that the substrates have been prepared correctly for the coatings to be applied
- K10 the importance of maintaining appropriate environmental conditions for the application and curing of the surface coating products
- K11 the time intervals that are required between coats and why these must be adhered to

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- K12 the procedures for the handling and safe use of coating materials and solvents
- K13 the use of paint thinners to adjust the viscosity of the product being applied
- K14 selection of the application equipment to suit the materials and the finish required (to include spray gun atomising and air control, tip size, fluid delivery rates and fan angle)
- K15 the principles of correct air flow and its effect on quality and safety
- K16 the correct grounding and earth continuity of the equipment
- K17 the importance of checking lines for damage and for kinks; the use of a 'daily check list'
- K18 the requirements for cleaning pumps, filters, surge chambers and the need to top up the oil cup
- K19 the requirements for cleaning spray guns (including the cleaning of the diffuser, tip and tip guard, the flushing of the gun and of the lines, the lubrication of the needle)
- K20 the techniques required for the application of marine coating products to a variety of surfaces
- K21 the requirements for working afloat, on outer bottoms and at heights
- K22 the importance of avoiding overspray; the need for containment and for exclusion zones
- K23 the procedure to contain and to clear away spillages.
- K24 the identification of faults in application and their causes and correction (to include distorted patterns, tailing, dry spray, over spray, and pinholing)
- K25 simple non-destructive testing procedures to ensure that colour, gloss, adhesion and other required performance qualities are achieved
- K26 minimising and handling waste materials (including the environmental impact of the materials you are using and the minimisation of this impact)
- K27 the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

## Additional Information

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### Scope/range related to performance criteria

*You must be able to:*

1. Ensure that the appropriate measures are implemented before starting the application of the surface coatings, to include carrying out **all** of the following:
  - 1.1. adhere to procedures or systems in place for risk assessment, COSHH, CHIPS data, personal protective equipment and other relevant safety regulations
  - 1.2. ensure that appropriate exclusion zones and containment facilities are set up
  - 1.3. ensure that equipment is correctly prepared for the spraying operations (such as spray guns, air supplies)
  - 1.4. carry out any necessary masking
  - 1.5. confirm that appropriate emergency arrangements are in place for any confined space or hazardous work (where applicable)
  - 1.6. provide weather protection for the areas to be sprayed (where appropriate)
  - 1.7. ensure that environmental conditions meet the requirements for the application of the coating (such as surface temperature, air humidity)
  - 1.8. provide any means required to promote the curing of the coating (such as air supply, warm air)
  - 1.9. leave the work area in a safe and clean condition on completion of the activities
  
2. Apply coatings, by spraying, to yacht or boat structures incorporating **six** of the following features:
  - 2.1. corners (such as outside corners, edges, 'obscured' corners)
  - 2.2. level surfaces
  - 2.3. vertical flat surfaces
  - 2.4. horizontal flat surfaces
  - 2.5. inclined surfaces
  - 2.6. curved surfaces
  - 2.7. overhead surfaces
  - 2.8. round parts
  - 2.9. slender components
  - 2.10. machinery

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3. Apply surface coatings, by spraying, in **all** of the following situations:
  - 3.1. confined spaces (such as tanks, voids, double bottoms)
  - 3.2. internal spaces
  - 3.3. at height
  - 3.4. covered exterior environment
  - 3.5. exposed exterior environment
  - 3.6. outer bottoms
  - 3.7. hull bottoms
  - 3.8. weather decks
  
4. Apply coatings in **one** of the following environments:
  - 4.1. ashore
  - 4.2. afloat
  - 4.3. in a spray cell
  
5. Apply spray coatings using **three** of the following types of equipment:
  - 5.1. conventional spray
  - 5.2. bottom feed (deck) lance
  - 5.3. hopper gun
  - 5.4. airless spray
  - 5.5. air-assisted airless spray
  - 5.6. electrostatic spray
  - 5.7. plural pump system
  - 5.8. pressure pots
  - 5.9. high volume low pressure spray (HVLP)
  
6. Apply spray coatings to **six** of the following yacht or boat substrates :
  - 6.1. uncoated composite material
  - 6.2. previously coated composite material
  - 6.3. uncoated wood
  - 6.4. previously coated wood
  - 6.5. uncoated compliant polymers
  - 6.6. previously coated compliant polymers
  - 6.7. uncoated ferrous material
  - 6.8. uncoated non-ferrous material
  - 6.9. previously coated ferrous material
  - 6.10. previously coated non-ferrous material
  - 6.11. other coated or uncoated materials
  
7. Apply **five** of the following yacht or boat surface coatings:
  - 7.1. holding primer
  - 7.2. solvent based epoxies
  - 7.3. water based epoxies
  - 7.4. non-skid deck paints
  - 7.5. bituminous paints

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- 7.6. chlorinated rubber paints
  - 7.7. vinyl tar paints
  - 7.8. two-component polyurethane paints
  - 7.9. water based acrylics
  - 7.10. anti-fouling coatings
  - 7.11. alkyds/silicone alkyds
  - 7.12. tar epoxy paints
  - 7.13. zinc ethyl silicate paints
  - 7.14. shop primer
  - 7.15. glass flake polyester coatings
8. Apply spray coatings using the appropriate techniques, to achieve **all** of the following:
- 8.1. correct film thickness
  - 8.2. correct banding/surface overlap
  - 8.3. smooth surface free from defects (such as run, drips and dust)
  - 8.4. complete coverage of the surface to be coated
  - 8.5. correct gloss level (where appropriate)
9. Check coating thickness, using **one** of the following methods:
- 9.1. wet film thickness gauge (combs, wet film)
  - 9.2. dry film thickness gauge (cured coating)
10. Apply spray coatings to yacht or boat components, in accordance with **one** of the following:
- 10.1. BS or ISO standards and procedures
  - 10.2. customer (contractual) standards and requirements
  - 10.3. company standards and procedures
  - 10.4. paint/covering manufacturer's recommendations
  - 10.5. recognised compliance agency/body's standards (such as Lloyds, Boat Safety Scheme, BMEA Code)
  - 10.6. other accepted international standards
11. Reinststate the work area on completion of the spraying activities, to include carrying out **all** of the following:
- 11.1. cleaning the spraying equipment and returning all tools and excess materials
  - 11.2. removing protection and exclusion arrangements (if no longer required)
  - 11.3. completing all relevant documentation (such as condition/pre-treatment of substrates, coating material preparation, equipment settings, confirmation of standard of finish)

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