

## Overview

This standard identifies the competences you need to inspect marine coatings to establish the condition, rectification requirements and compliance with contractual specifications. You will be required to access the appropriate contractual and other specifications and to extract all information necessary to carry out the inspection activities. You will be required to check that all stages of the surface preparation and coating application processes have been completed, in accordance with the process specification. The inspection methods used will include both visual observation and the use of a range of measuring instruments and gauges. You will be expected to select the appropriate inspection equipment to use and to ensure that it is correctly maintained and adjusted. You will be expected to inspect a variety of surfaces and a variety of coatings, in a number of shipyard and onboard environments. You will also be expected to produce a complete and comprehensive report, detailing the condition of the coated marine structure.

Your responsibilities will require you to comply with organisational policy and procedures for the coating inspection activities undertaken and to report any problems with these activities, or the measuring instruments and equipment in use that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work to with a minimum of supervision, taking personal responsibility for your actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will show a good understanding of your work and will provide an informed approach to the inspection of marine coatings. You will know about substrates and their preparation requirements, coating materials and their application requirements, in sufficient depth to provide a sound basis for carrying out the activities, identifying defects, recommending corrective action and for ensuring that the coated surfaces are to the required standards. Compiling accurate and legible reports will be a key issue in completing this standard.

You will understand the safety precautions required when carrying out the inspection activities 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. follow the correct specification for the product or equipment being inspected
3. use the correct equipment to carry out the inspection
4. identify and confirm the inspection checks to be made and acceptance criteria to be used
5. carry out all required inspections as specified
6. identify any defects or variations from the specification
7. record the results of the inspection in the appropriate format
8. deal promptly and effectively with problems within your control and report those that cannot be solved
9. complete relevant documentation in line with organisational procedures

## Knowledge and understanding

### *You need to know and understand:*

1. the safe working practices and procedures to be observed when inspecting surface preparation and marine coating application activities (such as general workshop and site safety, safety in enclosed/confined spaces, working at height, use of mobile elevated work platforms (MEWPs), atmospheric controls)
2. 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)
3. the 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)
4. the hazards associated with the use of surface preparation equipment and with the application and curing of marine coatings (such as the information in manufacturers' data sheets and in Chemicals Hazard Information and Packaging for Supply (CHIPS) data sheets)
5. the use of appropriate personal protective equipment (PPE)
6. the importance of adequate and safe lighting
7. the importance of avoiding exposure to hazards while witnessing paint application
8. the characteristics of and the applications for, marine coating products (including the use of manufacturers' data sheets, and requirements for the application of particular coating systems in order to comply with contractual specifications)
9. the importance of having compatible paint systems including their application such as two pack polyurethane over silicon alkyd
10. the characteristics of and the requirement for surface preparation standards
11. how to carry out currency/issue checks of the specifications you are working with

12. the importance of appropriate environmental conditions for the application and curing of marine coating products
13. the importance of using recommended methods of application for particular marine coating systems and of complying with overcoating intervals
14. the types of defect to be found in both newly applied and in existing paint systems and their causes
15. the importance of complete and comprehensive inspection (including obscured areas and areas of difficult access)
16. 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
17. the requirements for working afloat, on outer bottoms and at height
18. the types of inspection equipment available and the use of the inspection equipment such as bresle test for salt contamination
19. the limitations of your knowledge and of the types of inspection equipment available to you and the need to seek further (such as laboratory) assistance
20. the particular importance of ensuring that tank coatings are cured and any solvents released
21. basic quality control requirements and the importance of producing comprehensive reports to demonstrate compliance with contractual requirements
22. why is it important to keep the inspection equipment clean and free from damage, to practice good housekeeping of tools and equipment and to maintain a clean and tidy working area
23. the defects that occur in marine coatings and how they can be identified
24. how to carry out the inspection checks of the coatings
25. the level of defects that are acceptable in the coatings
26. why is it critical that records of inspected coatings are accurate, comprehensive and maintained legibly
27. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

## Scope/range related to performance criteria

1.

Carry out **all** of the following during the inspection activities:

- 1.1 use the correct contractual specifications and planning documentation
- 1.2 use appropriate health and safety documentation, including CHIPS data and risk assessments
- 1.3 use appropriate personal protective equipment (PPE), ensuring that it is in good condition and used correctly
- 1.4 check that all inspection equipment required is available, fit for use and within calibration certification (where applicable)
- 1.5 confirm any exclusion or safe working distance requirements for the operations in progress
- 1.6 confirm that confined spaces are safe to enter
- 1.7 confirm that appropriate emergency arrangements are in place for any confined space or other hazardous work
- 1.8 confirm that any lighting required is adequate and safe
- 1.9 apply safe and appropriate working practices and procedures at all times
- 1.10 complete all quality assurance and other documentation required
- 1.11 leave the work area in a clean and safe condition on completion of the activities

2.

Inspect previously painted surfaces, to determine **all** of the following:

- 2.1 percentage breakdown of coating
- 2.2 general condition (such as adhesion, colour, gloss) of coating
- 2.3 film thickness
- 2.4 sources of corrosion
- 2.5 remedial action required (including overcoating procedures)

3.

Inspect prepared surfaces to confirm the readiness for coating, to include **all** of the following:

- 3.1 surface cleanliness (such as freedom from oil/grease/salt/silicon contamination)
- 3.2 surface profile
- 3.3 compatibility of surface condition of existing coatings with coatings to be applied
- 3.4 application of stripe coatings (where required)

4.

Inspect coated surfaces to determine **all** of the following:

- 4.1 correct coating system has been applied
- 4.2 overcoating conditions are correct (such as inter-coat inspections)

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- 4.3 coatings are of specified thickness (including specified thickness distribution, especially at edges and around holes)
- 4.4 coatings are applied without defects (such as spray dust, orange peeling, pinholing, runs, holidays and fish eyes)
- 4.5 adequate adhesion/cohesion

5.

Inspect structures, to include **eight** of the following features:

- 5.1 corners (such as outside corners, obscured corners and edges)
- 5.2 structural sections
- 5.3 welds
- 5.4 horizontal flat surfaces, including overhead surfaces
- 5.5 vertical flat surfaces
- 5.6 inclined surfaces
- 5.7 curved surfaces
- 5.8 pipes and slender components
- 5.9 open weave composite surfaces

6.

Carry out required inspection in **seven** of the following situations and produce comprehensive reports:

- 6.1 confined spaces (such as tanks, voids, double bottoms)
- 6.2 outer bottoms
- 6.3 internal spaces
- 6.4 cargo holds
- 6.5 weatherwork
- 6.6 machinery spaces
- 6.7 weather decks
- 6.8 machinery items

7.

Carry out required inspection for **all** of the following applications:

- 7.1 surface preparation
- 7.2 the application of marine coatings
- 7.3 the curing of marine coatings  
and check, monitor and record **all** of the following:
- 7.4 air temperatures
- 7.5 air humidity/dew point
- 7.6 surface temperature
- 7.7 temperature of liquid coating
- 7.8 airflow

8.

Use a range of measuring instruments, to include **nine** of the following:

- 8.1 sling psychrometer
- 8.2 dew point calculator

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- 8.3 surface thermometer
- 8.4 wet film thickness gauge
- 8.5 dry film thickness gauge
- 8.6 camera
- 8.7 syringe and sample bottle
- 8.8 magnifier/pocket microscope
- 8.9 angle mirror
- 8.10 pH paper
- 8.11 conductivity meter
- 8.12 surface preparation standards (such as photographic, comparator)

plus **two** more of the following:

- 12. hull surface roughness analyser
- 13. thermograph
- 14. adhesion tester
- 15. set of sieves (for distribution of grain size in abrasives)
- 16. surface salt contamination sampler (such as a bresle test)
- 17. stylus type profile gauge
- 18. pinhole detector
- 19. deck surface coefficient of friction apparatus
- 20. specular reflection (gloss meter)

1.

Carry out inspections of unpainted and painted marine surfaces, in accordance with **two** of the following standards

- 1.1 BS or ISO standards and procedure
- 1.2 customer (contractual) standards and requirements
- 1.3 paint manufacturer's recommendations
- 1.4 industry standards
- 1.5 other accepted international standards

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## Behaviours

### **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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