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## Overview

This standard identifies the competences you need to prepare metallic surfaces using ultra high pressure (UHP) water jetting, in accordance with approved procedures. You will be required to obtain all information necessary to carry out the UHP water jetting activities. You will be required to check that any necessary exclusion, containment and masking protection requirements are implemented. You will be expected to select the appropriate and specified equipment and to ensure that it is correctly maintained and adjusted. You will prepare surfaces using UHP water jetting in a number of shipyard and shipboard environments.

Your responsibilities will require you to comply with organisation policy and procedures for the UHP water jetting activities undertaken and to report any problems with the preparation activities, or with the tools and equipment used, that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work to instructions, alone or in conjunction with others, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out

Your underpinning knowledge will be sufficient to provide a sound basis for your work and will provide an informed approach to undertaking surface preparation using UHP water jetting. You will know about the surface preparation requirements of the metallic substrate and the capabilities of the jetting procedure, in sufficient depth to provide a sound basis for carrying out the activities and for ensuring that the prepared surfaces are to the required standard.

You will understand the safety precautions required when carrying out the UHP water jetting 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.

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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. obtain and follow relevant instructions, standards and other specifications
3. identify the conditions of the surface to be prepared
4. select the appropriate tools and equipment and check they are in a safe and usable condition
5. carry out the preparation activities using appropriate tools and techniques
6. visually inspect the prepared surface to ensure that it meets the required specification
7. deal promptly and effectively with problems within your control and report those that cannot be resolved
8. shut down and secure the preparation equipment to a safe condition on completion of the activities
9. reinstate the work area on completion of the activities in line with agreed organisational procedures

## Knowledge and understanding

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

1. the safe working practices and procedures to be observed when preparing surfaces by UHP water jetting (such as general workshop and site safety, appropriate personal protective equipment (PPE), protecting other workers from the effects of the work, safety in enclosed/confined spaces, working at height, use of mobile elevated work platforms (MEWPs), atmospheric controls)
2. statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH, (such as Approved Codes of Practice (ACOP), 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)
3. the hazards associated with surface preparation using UHP water jetting (such as the cutting action of the water jet, reactive force, noise (hearing damage), water mist, debris, working at height, working in confined spaces)
4. the requirements for working in confined spaces and the importance of emergency procedures and safe systems of work (including safe evacuation, closing down compartments, 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)
5. the personal protective equipment (PPE) to be worn during the surface preparation activity
6. the types of substrates which can be prepared using UHP water jetting; the substrates on which the technique must not be used; the functions of surface preparation; the limitation of surface preparation by water jetting; flash rusting of ferrous substrates
7. the reasons for carrying out surface preparation and the effects on the final finishing activities if preparations are not carried out correctly
8. the types of defects and contamination to be found on unpainted and painted surfaces
9. how to obtain the required work procedures and instructions and how to interpret their requirements (to include the appropriate standards and specifications; use of paint manufacturers' data sheets to ascertain the surface cleanliness standards and profiles required)

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10. the limitations of UHP water jetting, the requirements for the removal of particular types of coatings, and hazards associated with the removal of particular coatings
  11. types of UHP water jetting equipment, setting up and operation, codes of practice, manufacturers' operating instructions, company procedures and instructions
  12. the requirements to contain, or to recover for filtration, the water contaminated by products of the surface preparation
  13. 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
  14. the tests which you can carry out on the prepared surfaces, to check their compliance with the specification
  15. how to dispose of waste materials safely (including the environmental impact of the materials you are using and the minimisation of this impact)
  16. 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 UHP water jetting activities:

- 1.1 ensure that the equipment is correctly prepared for the surface preparation activities undertaken and that all lines and joints are in good and safe condition
- 1.2 use appropriate personal protective equipment (PPE) correctly, checking that it is fit for service
- 1.3 confirm that the substrate to be jetted will not be damaged by the process
- 1.4 confirm that all necessary husbandry and containment arrangements are in place and are adequate, ensuring that no fluids or residues from the process enter controlled waters
- 1.5 confirm that appropriate emergency arrangements are in place for any confined space work or other hazardous
- 1.6 ensure that necessary and appropriate exclusion and safe working arrangements are in place
- 1.7 apply safe and appropriate working practices and procedures at all times
- 1.8 leave the work area in a safe and clean condition on completion of the activities

2.

Carry out preparation activities on either of the following:

- 2.1 unpainted surfaces
- 2.2 painted surfaces

3.

Visually inspect surfaces and identify surface preparation requirements for all of the following conditions:

- 3.1 surface corrosion
- 3.2 surface corrosion with pitting
- 3.3 paint coating defects (such as flaking/detachment, blistering, cracking/crocodiling, wrinkling)
- 3.4 removal of old coating systems

4.

Use UHP water jetting to remove paint and corrosion products from marine structures and prepare surfaces incorporating five of the following features:

- 4.1 corners (such as outside corners, edges, 'obscured' corners)
- 4.2 vertical flat surfaces
- 4.3 inclined surfaces
- 4.4 slender components
- 4.5 horizontal flat surfaces
- 4.6 round parts
- 4.7 overhead surfaces
- 4.8 curved surfaces

4.9 individual components (such as plates, deck fittings)

5.

Remove paint and corrosion products, using UHP water jetting, in two of the following situations:

5.1 confined spaces (such as tanks, voids, double bottoms)

5.2 weather work

5.3 outer bottoms

Plus two more of the following:

4. individual components (such as plates, deck fittings)

5. internal spaces

6. weather decks

1.

Prepare marine surfaces/coatings by UHP water jetting, in both of the following environments:

1.1 ashore

1.2 afloat

2.

Check that the prepared surfaces meet the specified standards, to include the use of both of the following methods:

2.1 visual examination

2.2 comparators

3.

Carry out surface preparation of marine structures, in accordance with one of the following standards:

3.1 BS, EN or ISO standards and procedures

3.2 customer (contractual) s and requirements

3.3 company s and procedures

3.4 paint/covering manufacturer's recommendations

3.5 recognised compliance agency/body's s

4.

Reinstate the work area on completion of the preparation activities, to include carrying out all of the following:

4.1 safely disposing of arisings and waste materials

4.2 cleaning and returning all tools and excess materials

4.3 removing protection and exclusion arrangements (if no longer required)

4.4 contributing to the completion of all required records

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## 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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Preparing surfaces by ultra high pressure (UHP) water jetting



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