

Carrying out nickel and chromium plating operations

Overview

This standard identifies the competences you need to carry out material finishing operations by nickel and chromium plating methods, in accordance with approved procedures. You will be expected to confirm with the authorised person, such as your immediate supervisor, that the equipment is ready for the plating operations to be performed and that all the required components/materials and consumables are available. You will be required to operate the nickel and chromium plating equipment, in line with safe working practices and approved procedures, continuously monitoring the plating operations and where necessary, making minor adjustments or seeking help from the authorised person to make the required adjustments, in order to ensure that the work output is to the required quality. Meeting production targets will be an important issue and your production records must show consistent and satisfactory performance. Your responsibilities will require you to comply with organisational policy and procedures for the nickel and chromium plating 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 to instructions, with a minimum of supervision, taking personal responsibility for your actions and for the quality of the work that you carry out. Your underpinning knowledge will be sufficient to provide a sound basis for your work and will enable you to adopt an informed approach to applying nickel and chromium plating procedures. You will have an understanding of the nickel and chromium plating process and its application and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities, recognising and reporting plating defects and ensuring that completed components are to the required specification. You will understand the safety precautions required when working with nickel and chromium plating equipment and solutions. You will be required to demonstrate safe working practices throughout. You will also understand your responsibilities for safety and the importance of taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines 2. follow work instructions and specifications for plating operations 3. ensure the material surfaces to be treated are prepared for the finishing operations 4. check that the finishing equipment and treatment solutions are set up and maintained at satisfactory operating conditions and levels 5. carry out the treatment process in accordance with operating procedures and the component specification requirements 6. ensure that the treated workpiece achieves the required characteristics and meets the finishing specification 7. deal promptly and effectively with problems within your control and report those that cannot be solved 8. ensure that work records are completed, stored securely and available to others, as per organisational requirements 9. leave the work area in a safe condition on completion of the activities, as per organisational and legal requirements

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken whilst carrying out the activities (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials) 2. the health and safety requirements of the work area and the activities, and the responsibility these requirements place on you 3. the hazards associated with the activities, and how to minimise them and reduce risks 4. the personal protective equipment and clothing (PPE) to be worn during the activities 5. the importance of keeping the work area clean and tidy 6. how to obtain and interpret the production documentation required during the plating activity 7. the basic principles of the operation of nickel and chromium plating equipment 8. how to prepare and make additions to the processing solutions 9. the visual checks to be made on components prior to plating 10. the pre-treatments to be carried out on components prior to plating 11. the methods used to hold/secure components during the plating process 12. the importance of monitoring the equipment settings and solutions during the nickel and chromium plating process 13. the types of adjustment that can be made to equipment settings to maintain component quality 14. how to identify nickel and chromium plating process faults (including blistering, missed plating, whitewashing, dull deposits, contamination and pitting) 15. the basic quality checks to be carried out on nickel and chromium plated components 16. how to remove contaminants safely from plating solutions (including the checking and maintenance of filters) 17. the procedure for the safe disposal of waste materials 18. how to pack and store finished components to avoid damage 19. the importance of completing the production documentation throughout the nickel and chromium plating process 20. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve 21. how to access, use and maintain information to comply with organisational requirements and legislation

Scope/range related to performance criteria

1. Apply nickel and chromium plating, carrying out all of the following activities: 1. use the correct issue of process documentation (specifications, job cards, quality control documentation) 2. adhere to health and safety regulations, systems and procedures to realise a safe system of work 3. confirm with the authorised person that the plant is ready for carrying out the plating operations 4. maintain sufficient quantities of process materials and components during the production cycle 5. seek any necessary instructions or training on the operation of the plating equipment 6. follow the defined operating procedures 7. ensure that the equipment settings and process solutions are adjusted (either by yourself or the authorised person) to maintain the correct customer specification 8. leave the work area in a safe and clean condition

2. Apply nickel and chromium plating to one of the following types of substrate: 1. mild steel 2. zinc based die castings 3. stainless steel 4. plastics 5. brass

3. Carry out four of the following activities during the nickel and chromium plating process: 1. segregate any defective components (pre and post plating) 2. prepare the nickel and chromium plating solutions 3. carry out pre-treatments (cleaning, rinsing, de-greasing, pickling) 4. jigging 5. masking 6. load components safely into plant 7. monitor the solutions and process settings (time, temperature, speed, pH, contamination) 8. safely make adjustments to solutions or process settings 9. maintain and change filters

4. Identify three of the following types of defect in nickel and chromium plated components: 1. blistering 2. dull deposits 3. missed plating 4. metallic contamination 5. whitewashing 6. pitting

5. Carry out, four of the following checks on the nickel and chromium plated products: 1. free from damage 2. free from contamination 3. surface quality/appearance 4. completeness of plating operations 5. thickness of coating 6. adhesion of deposit to substrate 7. bend test (manual or mechanical) 8. brittleness of deposit

6. Carry out three of the following completion activities: 1. check that components are dry before packing 2. place components in the specified container/area 3. store components in the correct quantities 4. use the correct packaging so as to avoid damage 5. complete the production documentation 6. place all labels/production documentation in the specified location 7. clean the tools and equipment

7. Check finishes applied to components by nickel and chromium plating comply with one of the following quality standards: 1. military or aviation 2. current industry standards or codes of practice 3. international standards 4. customer standards and requirements 5. company standards and procedures

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