SEMMPF235

Carrying out sulphuric acid anodising operations

Overview

This standard identifies the competences you need to carry out material finishing operations by sulphuric acid anodising 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 anodising operations to be performed and that all the required components/materials and consumables are available. You will be required to operate the sulphuric acid anodising equipment, in line with safe working practices and approved procedures, continuously monitoring the anodising 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 sulphuric acid anodising 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 sulphuric acid anodising procedures. You will have an understanding of the sulphuric acid anodising 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 anodising defects and ensuring that completed components are to the required specification. You will understand the safety precautions required when working with sulphuric acid anodising equipment and solutions. You will be required to demonstrate safe working practices throughout. You will also understand your responsibilities for safety, environment 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 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 following operating procedures and to meet the component specification 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 basic principles of the operation sulphuric acid anodising equipment 6. how to prepare process solutions safely and correctly 7. how to examine components for visual defects prior to anodising them 8. the pre-treatments to be carried out prior to sulphuric acid anodising 9. the methods used to hold/secure components during the anodising process 10. the importance of monitoring equipment settings during the sulphuric acid anodising process 11. how to make additions to process solutions 12. how to dispose of spent solutions 13. the methods and procedures to be observed when cleaning out tanks 14. the types of adjustment that can be made to equipment settings to maintain component quality 15. how to identify sulphuric acid anodising process faults (including jigging damage, gas entrapment, contact burns, pitting, low film misser, pre-treatment damage) 16. the importance of the sealing process when anodising components 17. the basic quality checks to be carried out on sulphuric acid anodised components 18. how to pack and store finished components to avoid damage 19. the importance of keeping process and workholding equipment clean 20. the importance of completing the production documentation throughout the anodising process 21. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve 22. how to access, use and maintain information to comply with organisational requirements and legislation

Scope/range related to performance criteria

1. Perform sulphuric acid anodising operations, 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 anodising operations 4. maintain sufficient quantities of process materials and components during the production cycle 5. seek any necessary instructions/training on the operation of the anodising 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. Carry out six of the following activities during sulphuric acid anodising the process: 1. segregate any defective components or batches (pre and post anodising) 2. prepare the solutions from basic constituents 3. carry out pre-treatments (such as cleaning, de-greasing, rinsing) 4. prepare components for anodising (such as jigging, wiring, clamping) 5. load components safely into plant 6. monitor solutions and process settings (such as time, levels, temperature, concentrations) 7. safely make adjustments to solutions or process settings 8. dispose of spent solutions 9. clean the process tanks 3. Identify all of the following types of defects in sulphuric acid anodised components: 1. jigging damage 2. damage to substrate (caused by pre-treatment) 3. contact burns 4. low film misser 5. pitting 6. gas entrapment 4. Carry out four of the following checks on sulphuric acid anodised components: 1. freedom from damage 2. freedom from contamination 3. surface quality/appearance 4. completeness of the plating operations 5. thickness of deposit 6. sealing quality of anodised film 5. 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 8. reprocessing of rejected parts, including the use of approved non-attacking strip methods 6. Check finishes applied to components by sulphuric acid anodising 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 requirements

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