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Z33: Anodizing

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Contents

Z33 Anodizing 1

Z33
Anodizing

To be read with preliminaries/ general conditions.

211 Working procedures

1. Requirement: Comply with BS 3987 as follows:
   1.1. Local film thickness:
      1.1.1. Minimum: Not less than 20 microns.
      1.1.2. Average: Not less than 25 microns.
   1.2. Colour: The anodizer shall confirm, in writing, that the process will satisfy all of the visual and physical requirements detailed within this specification.
   1.3. Sealing: Anodised aluminium shall be hydrothermally sealed. Do not use impregnated cold sealing processes.
   1.4. Abrasion resistance: Wear index when tested by the method described in BS EN ISO 8251: Not greater than 1.40.

221 Anodizer requirements

1. Processing
   1.1. A member of the Qualanod quality control system if Europe-based.
   1.2. Currently certified to BS EN ISO 9001.
   1.3. Only one anodizer shall be used unless agreed otherwise.
   1.4. Where possible, materials shall be sourced from a single production batch from a single supplier or shall be processed and fabricated so as to minimise the visual impact that different batches may have in the finished Sub-Contract works.
   1.5. If more than one anodizer is permitted, each anodizer to use only one plant.
   1.6. A current licensee of the relevant process licensor for coloured and dyed anodic coatings.

222 Service life

1. The service life of anodised aluminium shall be a minimum of 30 years.
2. Coloured anodising processes shall be lightfast. It shall not fade over its service life.

231 Applicator guarantees

1. Anodizer guarantees: Submit sample copies before commencement of anodizing.
2. Project specific guarantees: Submit signed copies on completion of work.
3. Guarantees to cover
   3.1. Colour: Opacity and consistency.
   3.2. Texture: Gloss, satin or matt.
   3.3. Quality of coating.
   3.4. Latent manufacturing defects minimum 10 years.

241 Control samples

1. Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
   1.1. Anodic coated samples: Showing colour and texture variation.
   1.2. Fabrication samples: Showing joint assembly, how anodic coating is affected and how cut metal edges are finished and protected.

1.3. The position of die bridges for hollow section profiles shall be arranged such that the occurrence of weld lines shall be minimised on significant surfaces. The extent of weld and die lines shall be subject to review through the sample approval process described above.

245 Independent inspection authority

1. Obtain from one of the following:
   1.1. Dr Christopher Chatfield, Chatfield Applied Research Laboratories Ltd, Newton House, Byers Lane, South Godstone, Surrey, RH9 8JH.
   1.2. Michael Atkinson, Atkinson Associates, 21 De Havilland Drive, Hazlemere, Bucks, HP15 7FP.
2. Submit, with the Tender, details of the Independent Inspection Authority and the test and inspection procedures that they intend to adopt.
3. Submit all testing and evaluation reports without alteration.

246 Independent inspection tests

1. Carry out the following tests as a minimum:
   1.1. Film thickness: Measured by one of the methods given in BS EN ISO 1463 or BS EN ISO 2360. In cases of dispute, use the method given in BS EN ISO 7599.
   1.2. Sealing quality: Measured by the method described in BS EN ISO 7599 and carried out on at least two samples.
   1.3. Surface abrasion resistance: By the methods described in BS ISO 18771. In cases of dispute, carry out tests by the methods described in BS EN ISO 7599, on test pieces cut from 8 No. components whose results from the abrasive paper test indicate that they have suspect low abrasion resistance.
2. Such tests and inspections as are deemed necessary to confirm that the materials comply with this specification.

251 Independent inspection at plant

1. Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that anodic coating application complies with this specification.
   1.1. Designated components:
2. Acceptance inspections: Carry out for each variation of colour and finish of each component work package at anodizer's plant prior to any fabrication of units, in accordance with the following:
   2.1. Where three of more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
   2.2. Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
3. Components failing inspection: Reprocess or replace and reinspect.
4. Inspection reports: The Contractor shall forward a copy of the inspection report, without alteration.

256 Quality assurance system

1. Requirement: Anodic oxide coatings to the following designated components is to be tested and approved in accordance with the Qualanod system.
   1.1. Designated components: All.

260 Independent inspection on site

1. Requirement: Where anodic coating specification compliance at plant is unresolved, contractors/ suppliers must commission an approved Independent Inspection Authority to carry out site acceptance inspections.
2. Acceptance inspections: Carry out in accordance with BS ISO 2859-2 with a limiting quality of 5% where the probability of acceptance is 10%. Each component of a fabricated unit will be assessed as an individual part for sampling procedures.
3. Components failing inspection: Remove and reprocess/ replace.

270 Component design

1. Condition of components to be anodized
    1.1. To comply with relevant recommendations of BS 4479-1, and -5.
    1.2. Of suitable size to fit plant capacity.

280 Component materials

1. Aluminium alloy for extrusions: Alloy 6060, 6063 T5 or T6 complying with BS EN 755-9.
2. Aluminium alloy for sheets: Alloy 5005 and the anodising grade of alloy sold under the designation J57S. All sheet J57S material involving quantities in excess of 1 tonne shall be from a single production batch and a guarantee covering the J57S will be required from the sheet supplier.

311 Pretreatment of aluminium components

1. Condition of components to be pretreated
    1.1. Free from corrosion and damage.
    1.2. All welding and jointing completed and finish off as specified.
    1.3. Free from impurities including soil, grease and oil.
    1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements
    2.1. Chromate system: To BS 6496 or BS EN 12206-1.
    2.2. Chromate-free system: To BS EN 12206-1. Submit details before using.

320 Pretreatment of steel components

1. Condition of components to be pretreated
    1.1. Free from corrosion and damage.
    1.2. All welding and jointing completed and finish off as specified.
    1.3. Free from impurities including soil, grease and oil.
    1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements: To BS EN 13438.

410 Extent of anodic coatings

1. Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed ‘significant surfaces’ for relevant BS 3987 performance requirements.

420 Application of anodic coatings

1. Surfaces to receive anodic coatings: Clean.
2. Commencement of anodic coating: To be continuous from pretreatment.
3. Jig points: To be agreed. Not on visible areas of anodic coated components.

4. Use of touch-up paint: Not acceptable.

431 Performance and appearance of anodic coatings

1. Standard: To BS 3987.
2. Visual inspection after anodizing: Significant surfaces to be free from visible coating/ defects when viewed from a distance of not less than 1m.

435 Anodizing sheets

1. Large sheets in the same plane shall be anodized to 5005 grade.
2. Components formed of sheets shall be manufactured prior to anodizing, unless specifically agreed in advance.

440 Fabrication

1. Units may be assembled
   1.1. Before anodizing, providing sufficient drainage holes are included in components to fully drain components.
   1.2. From components anodized after cutting to size.
   1.3. Where approved, from components anodized before cutting to size.
   1.4. Exposure of uncoated background metal: Not acceptable.
   1.5. Assembly sealants: Compatible with anodic coatings. Obtain approval of colour if sealants are visible after fabrication.

451 Damaged components - repair/ replacement

1. Before delivery to site: Check all components for damage to anodic coatings. Replace damaged components.
2. Site damage:
   2.1. The rectification of damaged anodised aluminium finishes located externally shall not be permitted.
   2.2. The rectification of damage to anodised aluminium finishes located internally shall be permitted subject to an agreed repair benchmark and method.

510 Protection

1. Anodic coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
2. Protective coverings: Must be:
   2.1. Resistant to weather conditions.
   2.2. Partially removable to suit building in and access to fixing points.
3. Protective tapes in contact with anodizing to be
   3.1. Low tack, self adhesive and light in colour.
   3.2. Applied and removed in accordance with tape and anodizers recommendations.
4. Inspection of protection: Carry out weekly. Promptly repair any deterioration or deficiency.

530 Documentation

1. Submit the following information for each batch of anodic coated components
   1.1. Supplier.
   1.2. Trade name.
   1.3. Colour (if required).
   1.4. Batch and reference number.

1.5. Statutory requirements.

540 Completion

1. Protection: Remove.
2. Cleaning and maintenance of anodic coatings: Carry out in accordance with procedures detailed in anodizer's guarantees.

Ω End of Section