

## Synopsis of ISO standards for Qualanod Specifications

Appendix VII includes two lists of standards relevant to the Specifications. Compliance with the standards of the first list is a requirement to be able to obtain and retain a licence. In that list are a number of standards from the EN 12373 series which are being replaced by new ISO standards. These ISO standards are given in the table below with their EN equivalents which they have superseded. This document describes the significant differences between the new ISO standards and their old EN equivalents. Qualanod believes that the analysis is accurate. However, it accepts no liability for inaccuracies or omissions.

ISO standard	Title	EN equivalent
ISO 2106	Anodizing of aluminium and its alloys -- Determination of mass per unit area (surface density) of anodic oxidation coatings -- Gravimetric method	EN 12373-2
ISO 2128	Anodizing of aluminium and its alloys - Determination of thickness of anodic oxidation coatings - Non-destructive measurement by split-beam microscope	EN 12373-3
ISO 2143	Anodizing of aluminium and its alloys -- Estimation of loss of absorptive power of anodic oxidation coatings after sealing -- Dye-spot test with prior acid treatment	EN 12373-4
ISO 2931	Anodizing of aluminium and its alloys - Assessment of quality of sealed anodic oxidation coatings by measurement of admittance	EN 12373-5
ISO 3210	Anodizing of aluminium and its alloys - Assessment of quality of sealed anodic oxidation coatings by measurement of the loss of mass after immersion in phosphoric acid/chromic acid solution	EN 12373-6 EN 12373-7
ISO 7599	Anodizing of aluminium and its alloys - General specifications for anodic oxidation coatings on aluminium	EN 12373-1
ISO 8251	Anodizing of aluminium and its alloys -- Measurement of abrasion resistance of anodic oxidation coatings	EN 12373-9 EN 12373-10

There are no significant differences between ISO 2143: 2010 and EN 12373-4, and between ISO 2931: 2010 and EN 12373-5.

### ISO 2106: 2011

#### EN 12373-2 clause 5.1

ISO 2106 says that the surface of the test piece to be tested shall have an area of between 0,08 dm<sup>2</sup> and 1 dm<sup>2</sup>.

## **ISO 2128: 2010**

### **EN 12373-3 clause 5**

ISO 2128 says that the inspection area should be agreed by the anodizer and the customer.

## **ISO 3210: 2010**

ISO 3210 includes two methods. Method 1 is without the prior acid treatment while method 2 is with the prior acid treatment.

- For decorative and protective applications where resistance to staining is important, method 1 is applicable.
- For architectural purposes, method 2 is applicable. However, method 1 may be used if the application is less severe.

Method 1 is identical to method 2 except concerning the prior acid treatment and that method 1 requires the removal of any surface bloom by rubbing with a dry cloth before the test piece is degreased.

### **EN 12373-7 clause 6.6**

ISO 3210 says the solution should not be used after 4,5 g of anodic oxidation coating have been dissolved per litre of solution. It does not refer to the area of anodized surface.

## **ISO 7599: 2010**

### **EN 12373-1 clause 4.3**

ISO 7599 includes "any requirements for the quality of sealing".

### **EN 12373-1 clause 6.2**

ISO 7599 says that:

- Thickness classes are designated by the letters "AA" followed by the thickness grade, eg AA 20.
- The choice of thickness class will depend on relevant national standards.
- For certain applications, eg where corrosion resistance is important, the anodizer and customer may agree a minimum local thickness with no restriction on the average thickness.
- The use of some dyestuffs necessitates the specification of AA 20 or higher to get adequate dye absorption and light fastness.
- For anodized aluminium, the degree of protection against pitting corrosion of the aluminium increases with increasing coating thickness. Thus, product lifetime is very dependent on coating thickness. This should be considered when analysing the full life-cycle impact of the product including energy expenditure.

### **EN 12373-1 clause 6.3**

ISO 7599 says that eddy-current apparatus should be calibrated before use. An annex to the standard describes standard test panels for use in calibration.

### **EN 12373-1 clause 7.2.1**

ISO 7599 additionally states that the necessity for the prior acid treatment and the maximum acceptable mass loss shall be agreed by the anodizer and the customer.

### **EN 12373-1 clause 9.1**

ISO 7599 says that visual inspection shall be carried out under diffuse light, the source and strength of which shall be agreed by the anodizer and customer. It does not specify viewing distances but says that they are a matter for agreement between the interested parties.

### **EN 12373-1 clause 9.2**

ISO 7599 does not specify the number of agreed samples.

### **EN 12373-1 clause 10**

ISO 7599 allows the AASS, CASS or NSS test as agreed by the anodizer and customer. However, it says that the AASS should be the referee test.

### **EN 12373-1 clause 13.1**

ISO 7599 says that the test method and performance requirements shall be specified by the customer to the anodizer. However, it refers to the method of ISO 2135 as a method of assessing coloured anodized aluminium

### **EN 12373-1 clause 13.2**

ISO 7599 says that the performance shall be specified by the customer, if required, by consulting the anodizer.

### **EN 12373-1 clause 14.6**

ISO 7599 refers to the methods of ISO 10215 and 10216; the method and performance required shall be agreed by the anodizer and customer.

## **ISO 8251: 2011**

ISO 8251 includes three methods. The abrasive wheel wear test and the abrasive jet test methods are similar to the methods of EN 12373-9 and EN 12373-10 respectively while the falling sand abrasion test method is new.

ISO 8251 does not specify methods for testing coatings produced by hard anodizing but refers to ISO 10074 "Anodizing of aluminium and its alloys — Specification for hard anodic oxidation coatings on aluminium and its alloys" for the descriptions of the use of these methods.

**EN 12373-9 clause 6.1.3.3**

ISO 8251 requires that the force between the wheel and the test surface be adjusted to  $3,9 \text{ N} \pm 0,1 \text{ N}$ .

**EN 12373-9 clause 6.1.4**

ISO 8251 has no requirement for the minimum test specimen size for a single determination.

**EN 12373-9 clause A1 and EN 12373-10 clause C1**

ISO 8251 specifies the aluminium as Al 99,5 (Al min. 99,5%) and test specimen thickness as 1.0 mm to 2,0 mm.

**EN 12373-9 clause A3 and EN 12373-10 clause C3**

ISO 8251 specifies the conditions of anodizing to include a temperature of  $20 \text{ °C} \pm 0,5 \text{ °C}$ . It allows solution agitation by compressed air or solution circulation.