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Replace GB/T 5237.2—2008

Wrought aluminium alloy extruded profiles for architecture— Part 2: Anodized profiles

铝合金建筑型材— 第2部分:阳极氧化型材

(*English Translation*)

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Foreword

SAC/TC 243 is in charge of this English translation. In case of any doubt about the contents of English translation, the Chinese original shall be considered authoritative.

The GB/T 5237 *Wrought aluminum alloy extruded profiles for architecture* consists of following six parts under the general title:

—*Part 1: Mill finish profiles*;

—*Part 2: Anodized profiles*;

—*Part 3: Electrodeposition coating profiles*;

—*Part 4: Powder coating profiles*;

—*Part 5: Paint coating profiles*;

—*Part 6: Thermal barrier profiles*.

This is the second part of GB/T 5237.

This part is drafted in accordance with the rules given in the GB/T 1.1—2009.

This part replaces the GB/T 5237.2—2008 *Wrought aluminum alloy extruded profiles for architecture—Part 2: Anodized profiles* in whole. In addition to a number of editorial changes, the following technical deviations have been made with respect to the GB/T 5237.2—2008:

—Deleted the statement in the foreword "In this part, clauses 4.4.1 and 4.4.2 are compulsory. The others are recommended" (See foreword of 2008 edition);

—Deleted the statement in the foreword "This part is revised in relation to JIS H 8601—1999 *Anodic oxide coatings on aluminum and aluminum alloys*" (See the foreword of 2008 edition);

—Modified the "Scope" of this part (See clause 1, clause 1 of 2008 edition);

—Deleted the normative reference GB/T 228—2002 (See clause 2 and subclause 5.2 of 2008 edition);

—Deleted the normative reference GB/T 1766 (See clause 2 and subclause 5.4.6.1 of 2008 edition);

—Deleted the normative reference GB/T 8753.2 (See clause 2 and subclause 5.4.2 of 2008 edition);

—Deleted the normative reference GB/T 14952.3 (See clause 2 and subclause 5.4.3.3,5.5 and 6.4 of 2008 edition);

—Deleted the normative reference GB/T 20975 (all parts)(See clause 2 and subclause 5.1 of 2008 edition);

—Added the normative reference GB/T 3199 (See clause 2 and subclause 7.1.2,7.2 and 7.3);

—Added the normative reference GB/T 8005.3 (See clause 2 and 3);

—Added the normative reference GB/T 8753.1 (See clause 2 and subclause 5.4.3);

—Added the normative reference GB/T 12967.6 (See clause 2 and subclause 5.4.2 and 5.5);

—Replaced the dated reference GB/T 8013.1—2007 with the undated reference GB/T 8013.1 (See clause 2 and subclause 4.6.7,5.4.7 and 6.5,clause 2 and subclause 4.4.7,5.4.7 and 6.4 of 2008 edition);

—Modified the guide language of terms and definitions (See clause 3,clause 3 of 2008 edition);

—Modified the definition of "exposed surfaces" (See subclause 3.1,subclause 3.1 of 2008 edition);

—Deleted the definition of "local thickness" and "average thickness" (See subclause 3.2 and 3.3 of 2008 edition);

—Added surface texture types and characteristics,in classification (See subclause 4.1.2);

—Deleted the typical purpose in product classification (See subclause 4.1.2 of 2008 edition);

—Added "color of anodic oxide coatings",in classification (See subclause 4.1.3);

—Modified the surface treatment method in classification (See subclause 4.1.3,subclause 4.1.2 of 2008 edition);

—Modified "marking and examples" in classification (See subclause 4.1.4,subclause 4.1.3 of 2008 edition);

—Added "Quality assurance" (See subclause 4.2);

—Modified "Color and Color differences" as "Color difference" (See subclause 4.6.2,5.4.2 and clause 6,subclause 4.4.3,5.4.3 and clause 6 of 2008 edition);

—Modified the requirements of sand-falling test for abrasion resistance (See subclause 4.6.4, subclause 4.4.5 of 2008 edition);

—Added the abrasive jet test requirements for abrasion resistance (See subclause 4.6.4);

—Deleted the requirement of "accelerated weathering resistance "and relevant test methods (See subclause 4.4.6.1 and 5.4.6.1 of 2008 edition);

—Added the requirements and relevant test methods of "UV light resistance" (See subclause 4.6.6.1 and 5.4.6.1);

—Modified the test methods of chemical composition and mechanical properties (See subclause 5.1 and 5.2, subclause 5.1 and 5.2 of 2008 edition);

—Modified the test method for color difference (See subclause 5.4.2, subclause 5.4.3 of 2008 edition);

—Modified the test method for sealing quality (See subclause 5.4.3, subclause 5.4.2 of 2008 edition);

—Modified the test method for abrasion resistance (See subclause 5.4.4, subclause 5.4.5 of 2008 edition);

—Modified the note of natural exposure resistanceas "Many countries choose Florida atmospheric corrosion test station for natural exposure resistance. In the stations for atmospheric corrosion test in China, atmosphere condition and Floridais closer to the atmospheric corrosion test station in Qionghai Station, Hainan province, but there are some differences between the test results in the atmospheric corrosion test station in Qionghai, Hainan province and Florida" (See subclause 5.4.6.2, subclause 5.4.6.2 of 2008 edition);

—Modified the inspection method for appearance (See subclause 5.5, subclause 5.5 of 2008 edition);

—Modified the requirement of batch (See subclause 6.2, subclause 6.2 of 2008 edition);

—Added the classification of inspection (See subclause 6.3);

—Modified the regulations of inspection items (See subclause 6.4, subclause 6.3 of 2008 edition);

—Modified the regulations of sampling (See subclause 6.5, subclause 6.4 of 2008 edition);

—Modified the rejection and retest (See subclause 6.6, subclause 6.5 of 2008 edition);

—Modified the regulations of the marking (See subclause 7.1.1, subclause 7.4 of 2008 edition);

—Modified the regulations of the packaging (See subclause 7.2, subclause 7.3 of 2008 edition);

—Modified the contents of the quality certificate (See subclause 7.4, subclause 7.2 of 2008 edition);

—Modified the content requirements of order (or contract) (See clause 8, clause 8 of 2008 edition);

—Added the contents of quality assurance (See Annex A);

—Modified the protection measures for profiles during the process of transporting and using (See Annex B, Annex B of 2008 edition);

—Added bibliography (See bibliography).

This part was proposed by China Nonferrous Metals Industry Association.

This part was prepared by SAC/TC 243 State Administration of China for Standardization of Nonferrous Metals.

The previous editions of GB/T 5237.2 are as follows:

—GB/T 5237—1985, GB/T 5237—1993 (Anodized and colored profiles);

—GB/T 5237.2—2000, GB 5237.2—2004, GB/T 5237.2—2008.

Wrought aluminium alloy extruded profiles for architecture— Part 2: Anodized profiles

1 Scope

This part of GB/T 5237 specifies the terms, definitions, requirements, test methods, conformity with standards, marking, packaging, transporting, storing, quality certificate and contents of contract (or order) of wrought aluminum alloy extruded profiles with anodized oxide coating for architecture.

This part is applicable to wrought aluminum alloy extruded profiles for architecture with anodic oxide, electrolytic coloring or dyedsurface coating (hereafter referred to as the anodized profiles).

Wrought aluminium alloy extruded profiles with the same surface treatment and of the same use for other industries may also refer to this part.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 3199, *Wrought aluminum and aluminum alloy products—Packing, marking, transporting and storing*

GB/T 4957, *Non-conductive coatings on non-magnetic metal substrates—Measurement of coating thickness—Eddy current method*

GB/T 5237.1, *Wrought aluminum alloy extruded profiles for architecture—Part 1: Mill finish profiles*

GB/T 6461, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates—Rating of test specimens and manufactured articles subjected to corrosion tests*

GB/T 6462, *Metallic and oxide coatings—Measurement of coating thickness—Microscopical method*

GB/T 8005.3, *Aluminum and aluminum alloy—Terms and definitions—Part 3: Surface treatment*

GB/T 8013.1, *Anodic oxide coatings and organic polymer coatings on aluminum and its alloys Part 1: Anodic oxide coatings*

GB/T 8014.1, *Anodizing of aluminum and its alloys—The measuring method of thickness of anodic oxide coatings—Part 1: The measuring principle*

GB/T 8753.1, *Anodizing of aluminium and its alloys—Assessment of quality of sealed anodic oxidation coatings—Part 1: measurement of the loss of mass after immersion in acid solution(s)*

GB/T 9276, *Methods of exposure to natural weathering of coating*

GB/T 12967.3, *Test Methods for anodic oxidation coatings of aluminum and aluminum alloys—Part 3: Copper accelerated acetic acid salt spray test for anodic (CASS test)*

GB/T 12967.4, *Test Methods for anodic oxidation coatings of aluminum and aluminum alloys—Part 4: Determination of the comparative fastness to ultraviolet light and heat of coloured anodic coatings*

GB/T 12967.6, *Test Methods for anodic oxidation coatings of aluminum and aluminum alloys—Part 6: Determination of color differences and appearance of colored anodic oxide films by viewing method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 8005.3 and the following apply.

3.1
exposed surfaces

visible surfaces of profiles after they are machined, assembled and installed in the architecture, including opened or closed status

4 Requirements

4.1 Classification

4.1.1 Alloy, temper and dimension

The alloy, temper and dimension shall be in accordance with the requirements given in GB/T 5237.1.

4.1.2 Surface texture types and characteristics

Surface texture types and their characteristics are shown in Table 1.

Table 1—Surface texture types and characteristics

texture types	texture characteristics
clear surface	surface texture maintained the same appearance as the mill finishprofiles
matt surface	surface texture obtained by treating mill finish profiles with sand blasting, shot blasting or alkaline etching method
polished surface	surface texture with smooth and bright appearance obtained by polishing mill finish profilesusing cloth wheel, wool wheel, sandpaper, etc.
brushing surface	surface texture with straight line, random pattern, thread, ripple, spiral pattern or other appearances obtained by processing the surface of mill finishprofiles using mechanical friction method

4.1.3 Thickness class, color and surface treatment of anodic oxide coatings

Thickness class, color and surface treatment of anodic oxide coatings are shown in Table 2.

Table 2—Thickness class, color and surface treatment of anodic oxide coatings

thickness class[a,b]	color	surface treatment[a]
AA10, AA15, AA20, AA25	silver	anodic oxiding + sealing
	bronze, black, gold, etc.	anodic oxiding + electrolytic coloring[c] + sealing
		anodic oxiding + dyeing[d] + sealing

[a] Thickness class, E-coloring and sealing process have great influence on the performance of anodic oxide coatings.

[b] Normally, the salt spray corrosion resistance of anodic oxide coatings will become better with coating thickness increasing.

[c] Electrolytic coloring can onlymeet the demands of customers in a certain range of color.

[d] Normally, the ultraviolet resistance of dyeing is worse than that of electrolytic coloring.

4.1.4 Marking and example

The marking of products shall be expressed in the order of product name, the standard number of this part, alloy, temper, profile reference number and length, color (or color number), surface texture type and thickness class.Example of marking are listed as follows:

Aluminum profile, which ismade of alloy 6063, temper T5, reference No. (section code)421001, with specificlength 3 000 mm, bronze color, matt surface and with the thickness class AA15 is marked as:

Anodized profile GB/T 5237.2-6063T5-421001 × 3000 bronze matt surface AA15

4.2 Quality assurance

4.2.1 Process

Process assurance sees A.1.

4.2.2 Raw material

The quality requirements of mill finish profiles andchemical agent and additives used in anodic oxidation surface treatment see A.2.

4.3 Chemical composition

The chemical composition shall be in accordance with the requirements given in GB/T 5237.1.

4.4 Mechanical properties

The mechanical properties shall be in accordance with the requirements given in GB/T 5237.1.

4.5 Dimensions tolerance

The dimensions tolerance (including coating) shall be in accordance with the requirements given in GB/T 5237.1.

4.6 Performances of coating

4.6.1 Coating thickness

The average thickness and local thickness of coating shall be in accordance with the requirements givenin Table 3.The thickness class shall be specified in the order (or contract), otherwise shall be supplied in accordance with class AA10.

Table 3—Coating thickness requirement

thickness class	average thickness μm	local thickness μm
AA10	≥10	≥8
AA15	≥15	≥12
AA20	≥20	≥16
AA25	≥25	≥20

4.6.2 Color difference

The color shall be basically consisten with color sample agreed between the supplier and customer, or between the upper and lower limit of the standard sample agreed between the supplier and customer. When the purchaser demands to carry out instrumental test, the allowable color difference shall be agreed between the supplier and the purchaser and indicated in the order (or contract).

4.6.3 Sealing quality

After sealing quality test, the permissible mass loss shall not exceed 30 mg/dm^2.

4.6.4 Abrasion resistance

Sand-falling test or abrasive jettestcan be adopted for investigating abrasion resistance. For sand-falling test, the average sand consumption of wearing per micron of coating thickness shall not be less than 330 g. For abrasive jettest, the average time of wearing per micron of film thickness shall not be less than 3.5 s. Test methods for abrasion resistance shall be agreed upon by the supplier and customer, and indicated in the order (or contract). If not indicated, the sand-falling test should be adopted.

4.6.5 Salt-spray corrosion resistance

The salt-spray corrosion resistance of coating shall be in accordance with the requirements given in Table 4.

Table 4—Salt-spray corrosion resistance

thickness class	testing time h	protection class
AA10	16	≥9
AA15	24	
AA20	48	
AA25	48	

4.6.6 Weathering resistance

4.6.6.1 UV light resistance

After UV light resistance test, the color change of sample surface by visual inspection should not be more than the color change level agreed by the supplier and customer.

4.6.6.2 Natural exposure resistance

If natural exposure resistance is required by the purchaser, the test conditions and the acceptance

standard shall bespecified in order (or contract) agreed between the supplier and customer.

4.6.7 Other

If other performace is required by the purchaser, it shall be subject to agreement between the supplier and the purchaser according to GB/T 8013.1, and it shall be specified in the order (or contract).

4.7 Appearance

The surface of profiles with electrical burns or coating peeling or other defects which affect use are not allowed. But no coating locally within the 80 mm end of profile is permitted.

5 Test methods

5.1 Chemical composition

The analysis method for chemical composition shall be in accordance with GB/T 5237.1. The coating shall be removed before test.

5.2 Mechanical properties

The mechanical properties test shall be in accordance with GB/T 5237.1.

5.3 Dimensions tolerance

Measure method for dimensions tolerance shall be according to the methods given in GB/T 5237.1.

5.4 Performances of coating

5.4.1 Coating thickness

According to the measurement principle in GB/T 8014.1, coating thickness shall be measured by eddy current method as in GB/T 4957 or microscopical method as in GB/T 6462. Referee measurement shall be in accordance with GB/T 6462.

5.4.2 Color difference

Test method for color difference shall be in accordance with GB/T 12967.6.

5.4.3 Sealing quality

Test method for sealing quality shall be in accordance with GB/T 8753.1.

5.4.4 Abrasion resistance

Test method for abrasion resistance shall be in accordance with GB/T 8013.1.

5.4.5 Salt spray corrosion resistance

CASS test shall bein accordance with GB/T 12967.3.After the specified hour after testing(see Table 4),the result shall be estimated according to GB/T 6461.The total defect area percentage shall be related to the grade respectively in Table 5.

Table 5—Defect ratio and protection grade

defect area after testing/%	protection grade	defect area after testing/%	protection grade
none	10	>0.05—0.07	9.3
≤0.02	9.8	>0.07—0.10	9
>0.02—0.05	9.5	>0.10—0.25	8

5.4.6 Weathering resistance

5.4.6.1 UV light resistance

Test method for UV light resistance shall be in accordance with GB/T 12967.4 and the testingtime is 300 h .

5.4.6.2 Natural exposure resistance

Test method fornatural exposure resistance shall be in accordance with GB/T 9276.

NOTE Many countries choose Florida atmospheric corrosion test station for natural exposure resistance.In the stations for atmospheric corrosion test in China,atmosphere condition and Floridais closer to the atmospheric corrosion test station in Qionghai Station,Hainan province,but there are some differences between the test results in the atmospheric corrosion test station in Qionghai,Hainan province and Florida.

5.4.7 Others

The tests of other performances shall be in accordance with GB/T 8013.1 or shall be agreed by the supplier and the purchaser.

5.5 Appearance

Test method for appearanceshall be in accordance with GB/T 12967.6.

6 Conformity with standards

6.1 Inspection and acceptance

6.1.1 The profiles shall be inspected by the supplier, ensuring the product quality in accordance with the specification of this part and the order (or contract), and filling in the product quality assurance certificate.

6.1.2 The purchaser may re-check the received products according to this part. If the result is not in accordance with the specification of this part and the order (or contract), purchaser may inform supplier in a written form, and the problem may be solved through consultation by both sides. The disapproval of the appearance quality and tolerance on dimensions shall be raised within 1 month after products being received. The disapproval of other properties may be raised within 6 months after products being received. If arbitration is required, the inspection organization shall be agreed by the supplier and purchaser, the arbitration specimens will be supplied by supplier and the arbitration will be preceded between supplier and purchaser.

6.2 Batch

The profiles shall be inspected for acceptance in batches, and each batch shall be consisted of profiles with the same alloy, temper, dimension (or section code), surface texture type, thickness class, color and the surface treatment. There is no limit for batch weight.

6.3 Inspection classification

Product inspection includes delivery inspection and routine inspection.

6.4 Inspection item and process assurance item

6.4.1 Delivery inspection items, routine inspection items and process assurance items shall be in accordance with Table 6.

Table 6—Inspection item and process assurance item

inspection items	delivery inspection items	routine inspection items	process assurance items
chemical composition	√	—	—
mechanical properties	√	—	—
dimensionstolerance	√	—	—
coating thickness	√	—	—
color difference	√	—	—
sealing quality	√	—	—

Table 6 (*continued*)

inspection items		delivery inspection items	routine inspection items	process assurance items
abrasion resistance		[a]	√	√
salt spray corrosion resistance		[a]	√	√
weathering resistance	UV light resistance	[a]	√	√
	natural exposurere-sistance	[a]	—	√
other		[a]	—	—
appearance		√	—	—
NOTE "√" indicates the corresponding inspection item or process assurance item are necessary items, "—" indicates the corresponding inspection item or process assurance item are not necessary items.				
[a] Indicated the corresponding inspection item is the necessary items only when specified in the order (or contract).				

6.4.2 Routineinspection shall be carried out at least once every three years by the supplier.

6.5 Sampling

Sampling shall be in accordancewith Table 7.

Table 7—Sampling

inspection items		sampling specification	subclauses of requirement	subclauses of test method
chemical composition		According to GB/T 5237.1	4.3	5.1
mechanical property		According to GB/T 5237.1	4.4	5.2
dimension tolerance		Inspect piece by piece	4.5	5.3
coating thickness		According to Table 8	4.6.1	5.4.l
color difference		Inspect piece by piece	4.6.2	5.4.2
sealing quality		Take 2 pieces in every batch/inspection items, and one specimen of one piece after the profiles have been sealed for 120 h	4.6.3	5.4.3
abrasion resistance			4.6.4	5.4.4
salt spray corrosion resistance			4.6.5	5.4.5
weathering resistance	UV light resistance	Take 3 pieces in every batch, and one specimen of one piece. With the agreement of customer, the supplier can produce 3 test plates to replace the profile samples with same thickness class, color, surface treatment method and technology. The effective surface size (length × width) of the sample (or test plate) should be 250 mm × 150 mm	4.6.6.1	5.4.6.1
	natural exposureresistance		4.6.6.2	5.4.6.2

Table 7 (*continued*)

inspection items	sampling specification	subclauses of requirement	subclauses of test method
other coating properties	According to GB/T 8013.1, or other sampling specifications agreed by the customer and supplier	4.6.7	5.4.7
appearance	Inspect piece by piece	4.7	5.5

Table 8—Coating thickness sampling and upper limit for failed quantity Inpiece

batch quantity	randomly sampling quantity	upper limit for failed quantity
1—10	all	0
11—200	10	1
201—300	15	1
301—500	20	2
501—800	30	3
>800	40	4

6.6 Rejection and retest

6.6.1 When any specimen failed in chemical composition, the corresponding casting batch is unqualified, the others should be inspected in terms of casting batch and deliver the qualified batch. If the casting batch cannot be distinguished, the whole testing batch is unqualified.

6.6.2 When any specimen failed in mechanical property, double specimens should be taken from the same batch and be tested again. If the retest result is qualified, the whole batch is qualified. If any specimen failed in the second test, the whole batch failed. But after the discussion between the customer and the supplier, the supplier is allowed to check the others in the same batch piece by piece and deliver the qualified ones to the customer.

6.6.3 The whole batch is unqualified when any specimen failed in dimensions tolerance. But supplier is allowed to check the others in the same batch piece by piece and deliver qualified ones to the customer.

6.6.4 If the quantity of the unqualified coatings thickness exceed the upper limit as shown in Table 8, double specimens shall be taken from the same batch to test again. If the quantity of the failed coatings thickness of the retest is less than twice of the upper limit as shown in Table 6, the whole batch is qualified, otherwise the whole batch failed. Especially, with the agreement of the customer, it is allowed to check the others in the same batch piece by piece and deliver qualified ones.

6.6.5 The piece is unqualified when any specimen failed in color difference

6.6.6 The whole batch is unqualified when any specimen failed in sealing quality.

6.6.7 The whole batch is unqualified when any specimen failed in abrasion resistance.

6.6.8 The whole batch is unqualified when specimen failed in salt spray corrosion resistance.

6.6.9 The whole batch is unqualified when any specimen failed in weathering resistance.

6.6.10 The whole batch is unqualified when any specimen failed in other film properties.

6.6.11 This piece is unqualified when any specimen failed in appearance quality.

6.6.12 If the routine inspection results are not acceptable, the reassessment shall be performed for the quality of the mill finish profiles, the chemical reagents and the additives, and the production process. And the re-inspection should be carried out until qualified.

7 Marking, packaging, transporting, storing and quality certificate

7.1 Marking

7.1.1 Product marking

The qualified products shall be marked with the following content (or labeled with the following contents):

a) name and address of supplier;

b) product name;

c) inspection stamp of supplier's quality control department (or signature or seal of quality inspection personnel);

d) alloy, temper and dimension (or section code);

e) profile surface texture type, coating thickness class, color (or color number) and surface treatment method;

f) batch number or production date;

g) the standard number of this part;

h) production license number and QS mark.

7.1.2 Packaging box marking

The packaging box marking of the profiles shall be in accordance with GB/T 3199.

7.2 Packaging

The exposed surface of profiles shall be protected by materials such as paper and foam; other packing shall be in accordance with GB/T 3199.

7.3 Transporting and storing

The transporting and storing of profiles shall be in accordance with GB/T 3199. The protection measures during transporting and usage see Annex B.

7.4 Quality certificate

Every batch of profiles shall be attached with quality certificate, with following content:

a) supplier name;

b) product name;

c) alloy, temper and dimension (or section code);

d) profile surface texture type, coating thickness class, color (or color number) and surface treatment method;

e) batch number or production date;

f) weight or pieces;

g) test results and inspection stamp of the supplier's quality control department;

h) the standard number of this part;

i) production license number.

8 Order (or contract) content

Purchasing order (or contract) of the profiles involved in this part shall include the following contents:

a) supplier name;

b) product name;

c) alloy, temper and dimension (or section code);

d) tolerance class;

e) profile surface texture type, coating thickness class, color (or color number) and surface treatment method;

f) weight or total number;

g) special requirements for purchaser:

—the test requirement of salt spray corrosion resistance;

—the special requirement of abrasion resistance of coatings;

—the test requirement of UV light resistance;

—the test requirement of natural exposure resistance;

—the special requirement of coating thickness;

—the special requirement of color difference;

—the special requirement of packing;

—other special requirement;

h) the standard number of this part.

Annex A
(informative)
Quality assurance

A.1 Process assurance

A.1.1 Production process for anodic oxide coating should follow the provisions of GB/T 23612.

A.1.2 Different coloring and sealing processes have different impact on the coating performance and environment protection.It is recommended to adopt nickel salt E-coloring process with nickel recovery equipment and nickel-free,fluorine-free sealing process.

A.1.3 The unevenness of matt surface will have adverse effect on the corrosion resistance and abrasion resistance of anodic oxide coatings,and more attention should be paid to related process control.

A.2 Quality assurance of raw materials

A.2.1 Mill finish profiles

Quality of mill finish profiles shall be consistent with GB/T 5237.1.

A.2.2 Chemical agent and additives used for anodize oxidation treatment

A.2.2.1 Hazardous substances limitation

The limit of hazardous substances in chemical agentsand additives which used for anodize oxidation treatment sees Table A.1.

Table A.1—The limit of harmful substances in chemicals and additives which used for anodize oxidation treatment

hazardous substance	mass fraction
polybrominated biphenyl (PBB)	≤0.1%
polybrominated diphenyl ethers (PBDE)	≤0.1%
dioctyl phthalate (DEHP)	≤0.1%
butyl benzyl phthalate (BBP)	≤0.1%
dibutyl phthalate (DBP)	≤0.1%
diisobutyl phthalate (DIBP)	≤0.1%
soluble Pb	≤90 mg/kg

Table A.1 (*continued*)

hazardous substance	mass fraction
soluble cadmium Cd	≤75 mg/kg
soluble chromium Cr	≤60 mg/kg
soluble mercury Hg	≤60 mg/kg

A.2.2.2 Material safety data sheet (MSDS)

Suppliers of chemical agents and additives for anodizing treatment shall provide MSDS of their products.

A.2.2.3 Product use, storing instructions and after-sales technical service agreement

Product use and storing instructions shall be provided by supplier for proper using and chemical agents and additives storing. In order to ensure the quality and reliability of chemical agents and additives, after-sales technical service agreement shall be signed after consultation by bothsides.

A.2.2.4 Product marking

The qualified products should be marked with the following contents (or labeled with the following contents):

a) product name and grade;

b) appearance and form;

c) application;

d) net weight;

e) batch number;

f) quality guarantee period;

g) producer and contact telephone number.

A.2.2.5 Quality certificate

The content of quality certificate shall be discussed between anodizing factories and their suppliers for the quality and reliability of the chemical agents and additives, and the quality certificate shall at least include the information as below:

a) supplier name;

b) product name and grade;

c) product standard and requirement;

d) lot number or manufacture date;

e) analysis result of main component and impurity, test results of main property index;

f) analysis result of hazardous substance;

g) analysis conclusions;

h) stampof the supplier's quality control departments;

i) production license number.

Annex B
(informative)
The protection measures for profiles during transporting and using

B.1 In order to avoid damaging the anodic oxide coating, mutual friction, glide, extrusion and distortion shall be avoided during transporting and installation of the aluminum alloy architectural profiles.

B.2 In order to prevent the corrosion caused by the contact of sewage, condensation, cement and any other dirt contacting the surface of the profiles, it shall be protected carefully with suitable stowage. It can also use some kind of varnish or cere, plastic film which can be removed easily to protect the profiles.

B.3 It's advised that the installation of the aluminum alloy architectural profiles should be arranged at the late term of the construction. For avoiding the damage of anodic oxide coatings, try to stick labels on the package of profiles which indicated that "Carefully handling and delivering; Not allowed to contact the contaminant such as cement and mortar during storing and piling-up".

B.4 In order to make sure the quality of appearance and performance of coatings, the protective film on the surface of the profiles shall be teared properly within the specified time, and do not scratch the surface of profiles.

B.5 Sand for construction specified in GB/T 14684 shall be adopted to avoid corrosion on anodized profiles induced by corrosive substances such as chloride ion in sand. Especially, it is not allowed to use sea sand for relative high chloride ion.

B.6 The anodic oxide coatings may be corroded by dust sediment on surface, water absorbed by coatings, especially when the sulfide is in the air. So the surface of the coatings should be cleaned on schedule in order to prolong service life.

B.7 It is advised to clean the film every half year. The time interval can be adjusted according to the pollution of the service environment. The principle of cleaning is that the dirt on the surface should be cleaned up and the coating should not be damaged.

B.8 The cleaning method may be judged according to the degree and the scale of destruction may be caused. For small work pieces, cotton cloth is usually used to clean gently. For large work pieces, it is required to try to dissolve the sediment adhering on the surface. Hot water containing lubricant or soap liquid is used, and fiber brushes can be used to clean the dirt. Rubbering material (abrasive paper, wire brush, etc.) and corrosive solution (acid or alkaline) are not allowed. After cleaning, the coating shall be washed with clean water, especially for the position with cranny or dirt. It shall be

wiped with soft cloth absorbing alcohol,and then polished it with wax.

B.9 Other protective measures for profiles during the process of transporting and using listed in the relevant building specifications shall be strictly implemented.

Bibliography

[1] GB/T 14684, *Sand for construction*

[2] GB/T 23612, *Anodizing and electrophoretic painting technical specification on wrought aluminum alloy extruded profiles for architecture*

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