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Wooden photo frame

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(English Translation)

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Foreword

SAC/TC 198 is in charge of this English translation. In case of any doubt about the contents of the English translation, the Chinese original shall be considered authoritative.

This standard was drafted in accordance with the rules given in GB/T 1.1—2009.

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. The issuing body of this document shall not be held responsible for identifying any or all such patent rights.

This standard was prepared by SAC/TC 198, National Technical Committee on Wood-based Panels of Standardization Administration of China.

Wooden photo frame

1 Scope

This standard specifies the terms and definitions, classifications, requirements, test methods and inspection rules, as well as markings, packaging, transportation, and storage of wooden photo frames.

This standard applies to the wooden photo frame for indoor use in dry condition.

2 Normative references

The following 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 1931—2009 *Method for determination of the moisture content of wood*

GB/T 2828.1—2012 *Sampling procedures for inspection by attributes—Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

GB/T 4857.5 *Packaging—Transport packages—Vertical impact test method by dropping*

GB/T 9286 *Paints and varnishes—Cross cut test for films*

GB/T 9758.1 *Paints and varnishes—Determination of “soluble” metal content—Part 1: Determination of lead content—Flame atomic absorption spectrometric method and dithizone spectrophotometric method*

GB/T 9758.2 *Paints and varnishes—Determination of “soluble” metal content—Part 2: Determination of antimony content—Flame atomic absorption spectrometric method and rhodamine B spectrophotometric method*

GB/T 9758.3 *Paints and varnishes—Determination of “soluble” metal content—Part 3: Determination of barium content—Flame atomic emission spectrometric method*

GB/T 9758.4 *Paints and varnishes—Determination of “soluble” metal content—Part 4: Determination of cadmium content—Flame atomic absorption spectrometric method and polarographic method*

GB/T 9758.5 *Paints and varnishes—Determination of “soluble” metal content—Part 5: Determination of hexavalent chromium content of the pigment portion of the liquid paint or the paint in powder form—Diphenyl carbazide spectrophotometric method*

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GB/T 9758.7 *Paints and varnishes—Determination of “soluble” metal content—Part 7: Determination of mercury content of the pigment portion of the paint and of the liquid portion of water-dilutable paints—Flameless atomic absorption spectrometric method*

GB/T 16734—1997 *Names of Chinese main woods*

GB/T 17657 *Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels*

GB/T 18107—2000 *Hongmu*

GB/T 18513—2001 *Names of Chinese main imported woods*

GB/T 18584 *Indoor decorating and refurbishing materials—Limit of harmful substances of wood-based furniture*

GB/T 20446—2006 *Wood moulding*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in GB/T 117189—2009, GB/T 20240—2006 and the following apply.

3.1

wooden photo frame

assembly of wooden frame pieces made of materials such as solid wood, bamboo, or wood-based panels, etc. with processed surface, to frame photo, mirror, artwork, handwriting, painting, etc.

3.2

accessories

auxiliary function components or parts , such as hook, mat, stand, mirro, glass, etc.attached to wooden photo frames

3.3

surface attachment
adhesion of coating

resistant to separate the coating film from substrate

4 Classifications

4.1 According to the frame materials

- a) solid wood photo frame
- b) bamboo photo frame
- c) wood-based panel photo frame

4.2 According to surface decoration

- a) painted photo frame
- b) gilded (gold) photo frame
- c) backing photo frame
- d) other coating frame

4.3 According to applications

- a) photo frame
- b) mirror frame
- c) handwriting or painting frame
- d) artwork frame
- e) other-application frame

5 Requirements

5.1 Requirements on materials

5.1.1 Solid wood and bamboo

5.1.1.1 Moisture content shall be controlled between 7.0% and 14.0%.

5.1.1.2 Shall be treated with pesticides or fumigants.

5.1.1.3 Only one check with a width of less than 0.1 mm and a length of less than 5% of the frame length is permitted. Any decay is not permitted. Bore hole is permitted only if it does not significantly affect the appearance.

5.1.2 Wood-based panels

Wood-based panels shall conform to the requirements of the Qualified Grade specified in corresponding national standards or industry standards.

5.1.3 Accessories

Accessories shall conform to the requirements of the Qualified Grade specified in corresponding national standards or industry standards.

5.2 Dimensions

5.2.1 Rectangular photo frame

5.2.1.1 Length and width tolerances

The length and width tolerances of rectangular frame shall conform to the requirements specified in Table 1.

Table 1 — Length and width tolerances of rectangular frames

Unit: mm

Size	Tolerance
Length of long side ≤ 500	≤ 2.0
$500 < \text{length of long side} \leq 1000$	≤ 3.0
Length of long side > 1000	≤ 5.0

5.2.1.2 Shape and position tolerances

Shape and position tolerances for rectangular photo frame shall conform to the requirements specified in Table 2.

Table 2 Shape and position tolerances

Unit: mm

Item	Tolerance	
Squareness	Diagonal length ≤ 500	≤ 1.0
	$500 < \text{Diagonal length} \leq 1000$	≤ 2.0
	Diagonal length > 1000	≤ 3.0
Gap between 2 pieces connected at the corner		≤ 0.3
Lipping (height difference between 2 connected pieces)	Length of long side ≤ 500	≤ 0.2
	$500 < \text{length of long side} \leq 1000$	≤ 0.3

	Length of long side >1000	≤0.5
Note: Applicable to rectangular photo frame only.		

5.2.2 Round or oval photo frame

For round photo frame, the dimension tolerance shall be no more than 2 mm and 3 mm when the diameter is no less than and greater than 300 mm, respectively. For oval photo frame, the dimension tolerance shall be no more than 2 mm and 3 mm when the minimum diameter is no more than and greater than 300 mm, respectively.

5.2.3 Other shape photo frame

The dimension and tolerance of photo frame in other shape shall be negotiated between the supplier and the buyer.

5.3 Appearance quality

The appearance quality requirements shall comply with Table 3.

Table 3 — Appearance quality requirements

Item		Superior Grade	Qualified Grade
Surface decoration	Painting	Even thickness of painting; no pin hole, no nib (small particle), no blister, no painting flow, or no substrate revealment	
	Gold (gilding)	Bright surface; even color; no blister, no over burn	
	Backing	Backing material shall be firmly bonded; no bulge.	
Surface quality	Surface processing	Smooth surface; no burr or obvious machining marks of filing or scraping	
	Edge wane	Not permitted	Not permitted in the face; permitted in the back up to an area of 10 % of the back area of the frame pieces

5.4 Physical and chemical properties

The physical and chemical properties shall conform to the requirements specified in Table 4.

Table 4 Requirements for physical and chemical properties

Item	Unit	Grade	
		Superior Grade	Qualified Grade

Moisture content		%	7.0~14.0	
“Soluble” heavy metal content	Lead (Pb)	mg/kg	≤90	
	Antimony (Sb)		≤60	
	Arsenic (As)		≤25	
	Barium (Ba)		≤1000	
	Cadmium (Cd)		≤75	
	Chromium (Cr)		≤60	
	Mercury (Hg)		≤60	
	Selenium (Se)		≤500	
Adhesion of coating		Grade	≤ 2	≤ 3
Formaldehyde emission limit		mg/L	≤1.5	
Vertical impact test by dropping		—	The frame shall not be damaged or loosened. the accessory shall be in good condition. The surface shall have no falling off.	

6 Measurement and test methods

6.1 Appearance quality

Observe with eyes and check by hand touch. Use feeler gauge with an accuracy of 0.02mm or caliper with an accuracy of 0.02 mm when necessary.

6.2 Dimensions

6.2.1 Length and width

Measure the length and width 20 mm from and parallel to the edge using a tape ruler with a minimum interval of 1 mm.

6.2.2 Diameter of round or oval frame

Two measurements in any directions, the longest and the shortest diameter shall be measured using a tape ruler with a minimum interval of 1 mm for round and oval shaped frame, respectively.

6.2.3 Squareness

Measure two diagonal lengths with a steel tape ruler with a minimum interval of 1 mm and calculate the difference in between.

6.2.4 Opening between two pieces connected at the corner

Measure the openings with the feeler gauge with an accuracy of no less than 0.02 mm.

6.2.5 Lipping (height difference) between two connect pieces

Put the frame on a platform with the face side up, measure the biggest lipping (height difference) by a feeler gauge with an accuracy of no less than 0.02 mm.

6.3 Physical and chemical properties testing

Test pieces shall be made from the samples randomly selected from the products stored for more than 24 h. The requirements on dimensions and the quantity of the test pieces shall be conform to Table 5.

Table 5 Dimensions and tolerances of the test pieces

Item	Dimensions /mm	Quantity
Moisture content	50×width of frame piece	3 pieces
“Soluble” heavy metal content	Scrape off the coating layer	4 g
Formaldehyde emission	100×20	10 pieces
Adhesion of coating	150×150	3 pieces
Note: Adhesion of coating shall be directly tested on the frame piece if the size is big enough; otherwise, it shall be tested on the replacement board with the same material and coating.		

6.3.1 Moisture content

a) For solid wood and bamboo made frame, in accordance with GB/T 1931–2009.

b) For wood-based panels made frame, in accordance with GB/T 17657.

6.3.2 “Soluble” heavy metal content

The test pieces shall be prepared according to GB 18584. The heavy metal content of lead (Pb), antimony (Sb), barium (Ba), cadmium (Cd), and chromium (Cr) shall be tested according to the method specified in GB/T 9758.1, GB/T 9758.2, GB/T 9758.3, GB/T 9758.4, and GB/T 9758.5, respectively. The heavy metal content of mercury (Hg), selenium (Se) and Arsenic (As) shall be tested according to the methods specified in GB/T 9857.7.

6.3.3 Adhesion of coating

In accordance with GB/T 9286.

6.3.4 Formaldehyde emission

In accordance with GB/T 20446—2006, 6.5.

6.3.5 Vertical impact test by dropping

In accordance with GB/T 4857.5. Details see Table 6.

Table 6 Dropping test

Weight of products and its package				Drop height		Impact speed	
Equal to or greater than		less than		Free drop		Slope or horizontal platform	
lbs.	kg	lbs.	kg	in.	mm	ft/s	m/s
0	0	21	9.5	30	762	12.7	3.9
21	9.5	41	18.6	24	610	11.3	3.4
41	18.6	61	27.7	18	457	9.8	3.0
61	27.7	100	45.3	12	305	8.0	2.4
100	45.3	150	68	8	203	6.6	2.0

Note: lbs—pounds; in—inches; ft/s—feet/second; m/s—meter/second.

7 Inspection rules

7.1 Inspection classification

Inspection is divided into factory inspection and type inspection.

7.1.1 Factory inspection includes:

- a) Appearance quality inspection;
- b) Dimension inspection;
- c) Moisture content.

7.1.2 Type inspection

Type inspection includes all the items of factory inspection, formaldehyde emission, “soluble” heavy metal content, adhesion of coating and wood species. Type inspection shall be implemented in any of the following cases:

- a) When the raw and auxiliary materials or production processes undergo major changes;
- b) When production resumes after suspension for more than three months;
- c) At least twice a year during normal production;
- d) When new products are manufactured or the production line is transferred;
- e) When the quality supervision agency requires.

7.2 Principle for batch composition

Each of the inspection batches shall be composed of the same product, produced with the same raw material, the same specifications and the same producing technique.

7.3 Sampling methods

7.3.1 Appearance quality

For inspection of appearance quality items, adopt double sampling plans for normal inspection in GB/T 2828.1—2012 with inspection level II and acceptance quality limit AQL = 4.0 as shown in Table 7.

Table 7 Sampling plans for appearance quality

Lot size (N)	Sample size		First determination		Second determination	
	$n_1=n_2$	S_n	Acceptance number Ac1	Rejection number Re1	Acceptance number Ac2	Rejection number Re2
51~90	8	16	0	2	1	2
91~150	13	26	0	3	3	4
151~280	20	40	1	3	4	5
281~500	32	64	2	5	6	7
501~1 200	50	100	3	6	9	10
1 201~3 200	80	160	5	9	12	13
3 200~10 000	125	250	7	11	18	19
10 001~35 000	200	400	11	16	26	27

7.3.2 For inspection for dimensions and tolerances a, adopt double sampling plans for normal inspection in GB/T 2828.1—2012 with inspection level I and acceptance quality limit (AQL) of 6.5, as shown in Table 8.

Table 8 Sampling plans for dimensions

Lot size (N)	Sample size		First determination		Second determination	
	n1=n2	Sn	Acceptance number Ac1	Rejection number Re1	Acceptance number Ac2	Rejection number Re2
51~90	3	6	0	2	1	2
91~150	5	10	0	2	1	2
151~280	8	16	0	3	3	4
281~500	13	26	1	3	4	5
501~1 200	20	40	2	5	6	7
1 201~3 200	32	64	3	6	9	10
3200~10 000	50	100	5	9	12	13
10 001~35 000	80	160	7	11	18	19

7.7.3.3 Inspection for physical and chemical properties

For the inspection of physical and chemical properties, sampling plans are indicated in Table 9. Regarding the results of the first inspection, if a certain inspection item fails, the inspection can repeat for once. The samples shall be randomly selected from the batch.

Table 9 Sampling plans for physical and chemical properties

Lot size	Sampling size of the first inspection	Sampling size of the second inspection
≤1 000	1	2
1 201~2 000	2	4
2 001~3 000	3	6
>3 000	4	8

Note: The sample size can be enlarged if it is not enough; The samples size for re-inspection shall be doubled, the sample size shall be enlarged accordingly with the increase in batch size.

7.4 Determination rules

7.4.1 Appearance quality and dimension

Inspect samples n_1 according to the sampling plan. If the number of nonconforming items is equal to or less than the first acceptance limit (A_{c1}), the lot shall be considered acceptable. If the number of nonconforming items is equal to or greater than the first rejection number, R_{e1} , the lot shall be considered unacceptable. If the number of nonconforming items ranges between of the first acceptance number (A_{c1}) and the first rejection number (R_{e1}), the second inspection shall be conducted with the sample size n_2 . If the cumulative number of nonconforming items is equal to or less than the second acceptance number (A_{c2}) the lot shall be considered acceptable. If the cumulative number of nonconforming items is equal to or greater than the second rejection number (R_{e2}), the lot shall be considered unacceptable.

7.4.2 Physical and chemical properties

If all the test results of all items conform to the requirements of a certain grade, the lot shall be considered acceptable. Otherwise, the nonconforming items shall be re-inspected. If all the re-inspecting results passed the re-inspection, the lot shall be considered as acceptable, otherwise considered unacceptable.

7.4.3 Wood name

The wood species names identified shall comply with those listed in GB/T 16734—1997, GB/T 18107—2000 or GB/T 18513—2001; otherwise, the name used is considered unacceptable.

7.5 Comprehensive determination

If all the test results of appearance quality, dimensions, physical and chemical properties and wood species name conform to the requirements, the lot shall be considered acceptable. If not, the lot shall be considered unacceptable.

7.6 Inspection report

The inspection report shall include:

- a) The lot size, sample size, the place and date of sampling of the product;
- b) The classification, grade, the standard adopted and inspection classification;

- c) The inspection results and conclusions;
- d) The abnormal situation during the inspection and other issues need to be explained.

8 Marking, packaging, transportation and storage

8.1 Marking

The product or its package shall be marked or labeled with the manufacturer, address, trademark, product name, specification, grade, the standard adopted, product material (wood species shall be marked for solid wood frame), quantity, the date of manufacture or batch number, etc.

8.2 Packaging

The products shall be separately packed according to the product classification, specification, and grade. The qualification and inspection report shall be included in the package. The packaging shall provide the protection from collision, scratch, and staining, and shall have the labels to warn against moisture and direct sunlight.

8.3 Transportation and storage

The transportation tools shall be clean. During the transportation, the products shall be tidily laid in flat stacks and proof against mechanical damage, staining, moisture, and sunlight. During the storage, the product shall be tidily laid in flat stack according to classification, specification, and grade. Each individual product shall be marked accordingly. The storage place shall be proof against water, moisture, sunlight, and fire.
