The world leader in birch plywood production

CORPORATE STANDARD

GENERAL PURPOSE PLYWOOD WITH BIRCH FA CE VENEERS Specifications

CORPORATE STANDARD 00255177-001-2013

Kostroma
2013

Preface

Development purposes and objectives as well as the use of corporate standards in Russia are stated by the Federal Law 184-FZ "On Technical Regulation" as of December 27, 2002.

Development and execution rules are stated by GOST R 1.0-2004 Standardization in the Russian Federation. Basic Provisions" and GOST R 1.4-2004 Standartization In the Russian Federation. Corporate Standards. Basic Provisions."

The standard is harmonized with GOST 3916.1-96 plywood with outer layers of deciduous veneer for general use. Specifications." and the European standards.

Standard Information

1 DEVELOPED AND INTRODUCED by OAO Fanplit public company, plywood and particle board manufacturer, in replacement of STO 00255177-001-2007 with amendments 1, 2

2 APPROVED AND PUT INTO EFFECT by order of Director of the OOO Sveza Kostroma branch dated 20.06.2016 No. 135

3 AGREED WITH OOO SVEZA Forest Operations Director S.V. Stenin _____ , __ 20 _____

4 EXPERT OPINION OBTAINED from expert, Doctor of Science, Deputy Head of Plywood and Veneer Technology Department at OOO TsNIIF, T.V. Shevando, dated April 15, 2013

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General purpose plywood with birch face veneers
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Date introduced: 20 June 2016

1 SCOPE OF USE

The standard hereby covers general purpose plywood with birch face veneers.
It doesn't apply to custom or overlaid plywood.

2 REGULATORY REFERENCES

The standard hereby includes regulatory reference to the following standards:

GOST 12.1.044-89 Occupational safety standards system. Fire and explosion hazard of substances andmaterials. Nomenclature of indices and methodsof their determination

GOST 12.4.011-89 Occupational safety standards system. Means of protection. General requirements and classification.

GOST 427-75 Measuring metal rulers. Specifications

GOST 2140-81 Visible defects, of wood. Classification, terms and definitions, methods of measurement.

GOST 3749-77 Checking 90-degree C squares. Specifications

GOST 3916.1-96 Plywood with outer layers of deciduous veneer for general use. Specifications

GOST 6507-90 Micrometers. Specifications

GOST 7016-2013 Products of wood and wooden materials. Parameters of surface roughness.

GOST 7076-99 Building materials and products. Method of determination of steady-state thermal conductivity and thermal resistance

GOST 7502-98 Measuring metal tapes. Specifications

GOST 8925-68 Flat clearance gauges for machine retaining devices. Design.

GOST 9620-94 Laminated glued wood. Sampling and general requirements in testing

GOST 9621-72 Laminated glued wood. Physical testing methods

GOST 9622-87 Laminated glued wood. Methods for determination of ultimate strength and elasticity modulus in tension

GOST 9626-90 Laminated glued wood. Method for determination of impact viscosity in bending

GOST 9627.1-75 Laminated glued wood. Method for determination of hardness

GOST 11358-89 Dial-type thickness gauges and dial-type wall thickness gauges graduated in 0.01 and 0.1 mm. Specifications

GOST 14192-96 Cargo marking.

GOST 15612-2013 Products of wood and wooden materials. Methods for determining surface roughness parameters

GOST 16297-80 Sound insulation and sound absorption materials. Testing methods

GOST 18321-73 Statistical quality control. Item random sampling methods

GOST 25898-2012 Building materials and products. Methods of steam - tightness determination

GOST 27296-2012 Noise protection in building. Sound insulation of enclosures. Methods of measurement

GOST 27678-2014 Particle boards and plywood. Perforatory method for determining formaldehyde content

GOST 30244-94 Building materials. Methods for combustibility test.

GOST 30255- 2014 Furniture, timber and polymers. Method for determination of formaldehyde and other volatile chemicals in the air of climatic chambers

GOST 30427-96Plywood for general use. Classification of veneer surfaces by appearance

Note: While using this standard it is advisable to check validity of the standards referenced against National Standards reference index.

3 TERMS AND DEFINITIONS

The standard hereby uses the SHOP

Term for plywood with conventional cross-cut or rip cut along one edge up to 300 mm, sheet volume corresponds to full format but with reduced industrial part. The SHOP (conventional cut) zone may include defects listed in Appendix A to this Standard, as well as other defects not listed therein. Out-of-squareness and veneer delamination are not allowed in the SHOP zone."

4 CLASSIFICATION AND SIZES

4.1 Plywood is classified into grades according to the face veneer surface appearance and the glue joint water resistance; it is also divided into two categories: sanded and unsanded depending on the extent of mechanical processing.

4.1.1 Plywood falls into two grades according to the combination of its face veneers' grades: B Sel, B, S Sel, S, BBx, BB, CP, WGE, WG, C, CC (letters) and I, II, III, IV (Roman numbers).

Grade is marked with letters and Roman numbers.

Conventionally, B Sel, B, S Sel, and S plywood makes up Grade I; BBx and BB comprise Grade II; CP, WGE, WG plywood is Grade III, and C, CC products are Grade IV.

4.1.2 Plywood falls into the following grades according to glue joint water resistance and conditions of use:

INT (FK)—water resistant plywood glued with carbamide-formaldehyde adhesives, for interior use;

EXT (FSF)—waterproof plywood glued with phenolformaldehyde adhesives, for both interior and exterior use.

4.1.3 Based on the extent of mechanical processing, plywood is subdivided into the following types:

— Unsanded NS;

— Sanded, both sides S2S;

— Sanded, one side S1S;

It is allowed to produce one side sanded plywood (S1S) by manufacturer's agreement with the customer.

4.2 Sizes

2.1.4 The length and the width must comply with the requirements specified in Table 1 below.

Table 1

In mm

Plywood sheet length (width)	Maximum tolerance
1,220/1,250	±3.0
1,500/1,525	±4.0
2,440/2,500	±4.0
3,000/3,050	±5.0
Notes: 1. It is allowed to produce plywood in other sizes by agreement with the customer. 2. The plywood sheet's length is measured along the grain of the face veneers. 3. It is allowed to produce SHOP type plywood.	

4.2.2 Thickness and number of plies must comply with values specified in Table 2.

Table 2

In mm

Nominal plywood thickness	Number of plies	Sanded plywood		Unsanded plywood	
		Maximum tolerance	Variations in thickness	Maximum tolerance	Variations in thickness
3	3	+0.3 -0.4	0.6	+0.4 -0.3	0.6
4	3	+0.3 -0.5		+0.8 -0.4	1.0
5	4 and 5	+0.4 -0.5		+0.8 -0.4	
6	5	+0.4 -0.5		+0.9 -0.4	
6.5	5	+0.4 -0.5		+0.9 -0.4	
8	6 and 7	+0.4 -0.5		+1.0 -0.5	

Table 2 — conclusion

Nominal plywood thickness	Number of plies	Sanded pywood		Unsanded plywood	
		Maximum tolerance	Variations in thickness	Maximum tolerance	Variations in thickness
9	7	+0.4 -0.6	0.6	+1.0 -0.5	1.0

10	7 and 8	+0.5 -0.6	1.0	+1.0 -0.5	1.5
12	9	+0.5 -0.7		+1.1 -0.6	
15	11	+ 0.6 -0.8		+1.2 -0.7	
18	13	+0.7 -0.9		+1.3 -0.8	
21	15	0.0 -1.1		+1.0 -1.1	
24	17	0.0 -1.5		+1.0 -1.5	
27	19	0.0 -1.8		+1.5 -1.8	2.0
30	21	0.0 -2.0		+1.6 -2.0	
35	25	0.0 -2.0		+1.6 -2.0	
40	28 and 29	+1.2 -1.2		+1.6 -2.0	

Note:

1. Plywood with an even number of plies has two internal adjacent plies with parallel direction of grain.
2. The production of plywood with other thicknesses, number of layers, and tolerance limits is permitted by agreement between the manufacturer and the customer.

4.2.3 Plywood sheets must be cut square.

Out-of-squareness must not exceed 2 mm per 1 m of the sheet edge length, when controlled as per section 7.4.1.

Difference in the diagonal lengths must not exceed 2 mm per 1 m of the sheet edge length, when controlled as per section 7.4.2.

4.2.4 Out-of-straightness must not exceed 4 mm per 2 mm of the sheet length.

4.3 Plywood marking must include the following information:

—Product description with face veneer timber species;

—Grade

—Emission class;

—Surface treatment type;

—Dimensions;

------Indication of the standard hereby.

Code example for INT(FK) grade birch plywood with B/BB (I/II) face veneer combination, E1 emission class, both sides sanded, 1.525 mm long, 1.525 mm wide, 10 mm thick:

Plywood, birch, INT(FK), B/BB (I/II), E1, IU2 / S2S, 1525 x 1525 x 10
STO 00255177-001-2013

5 TECHNICAL SPECIFICATIONS

5.1 Specifications

5.1.1 For outer plies birch veneer is used. Core veneers may be of other timber species.

Plywood made using a single timber species or combined of different species are divided into mono and combi plywood, respectively.

Veneer thickness of the face and the core plies must not exceed 4 mm.

5.1.2 In face veneers, wood flaws and processing defects that exceed the limits specified in Table 5 are not allowed.

5.1.3 In core veneers, the wood flaws and processing defects that don't affect the product's quality and size specifications stated by the requirements hereby are allowed.

5.1.4 Depending on the face veneer quality plywood is manufactured in any combinations of the above mentioned grades.

5.1.5 It is allowed to make face plies graded B Sel, B, S Sel, S, BBx, and BB from two or three veneer strips of the same width and color. It is allowed combine face plies graded CP, WGE, WG, C, CC from unlimited number of veneer strips, no color matching is required.

5.1.6 Veneer patches for knotting, inserting, and shake filling may be of different shapes and sizes. For patching defects wider than 30 mm it is allowed to use rectangular veneer inserts along the full length of the defect.

Veneer patches must fit the surface, hold tight, and match the outer ply timber species. For S Sel, S, and BB grades patches must match wood color and grain direction of the face veneer.

Putty must match wood color, ensure finishing materials adhesion, not chip out during plywood machining or bending, not crack.

5.2 Formaldehyde content in plywood and formaldehyde release into the room air depending on the emission class must comply with the value specified in Table 3.

Table 3

Emission class	Formaldehyde content per 100 g of plywood oven- dry weight, mg	Formaldehyde release	
		Chamber method, mg/m^3 of air	Gas analysis method, mg/m^2*h
E1	Up to and icl. 8.0	Up to 0.124	Up to and incl. 3.5, or less than 5.0 within 3 days after manufacture
E2	Over 8.0 up to and incl. 30	Up to 0.124	Over 3.5 up to and incl 8.0, from 5.0 to 12.0 within 3 days after manufacture

5.3 Plywood physical and mechanical performance is specified in Tables 4 and 5.

Table 4

Item name	Thickness, mm	Physical and mechanical performance values
1 Moisture content, %	3-40	Not more than 14
2 Ultimate static bending strength:	9 - 40	
—along the grain of face veneers, MPa, min		
INT (FK) grade plywood		45
EXT (FSF) grade plywood		60
—against the grain of face veneers, MPa, min		
INT (FK) grade plywood		30
EXT (FSF) grade plywood		30
3 Modulus of elasticity in static bending:	9-40	
—along the grain, MPa, min		
INT (FK) grade plywood		5,000
EXT (FSF) grade plywood		6,000
—against grain, MPa, min		

INT (FK) grade plywood EXT (FSF) grade plywood		3.000 3.000
4 Ultimate tensile strength along the grain, min MPa	3-6.5	30
5 Impact viscosity in bending, KJ/m^2	9-40	34
6 Hardness, MPa	9-40	20
7 Thermal conductivity factor, Wt (mK), with an average density, kg/m^3 300 500 700 1,000	3-40	 0.09 0.13 0.17 0.24
8 Water vapour resistance factor for wet cup testing with an average density, kg/m^3 300 500 700 1,000 for dry cup testing with an average density, kg/m^3 300 500 700 1,000	3-40	 50 70 90 110 150 200 220 250
9 Noise absorption factor, dB, in frequency range, Hz 250-500 1000-2000	3-40	 0.10 0.30
10 Sound insulation, dB	6.5-40	23.0
11 Biological stability, hazard class	3-40	5fDa, St
12 Flammability class	3-40	Under GOST 30244
Note: Factors from items 4-12 are chosen by agreement with the customer.		

Table 5

Average ultimate shear strength along the glueline, MPa	Destruction in wood, %
Over 0.2 up to and incl. 0.4	Over or equal to 80
Over 0.4 up to and incl. 0.6	Over or equal to 60
Over 0.6, but less than 1.0	Over or equal to 40
1.0 and more	-

Notes:

1 INT (FK) plywood is tested by soaking samples in water for 24 hours at 20±3°C.

2 EXT (FSF) plywood is prepared to testing using one of the four following methods:

—boiling in water for 1 hour;

—soaking in water for 24 hours at 20±3°C, boiling in water for 6 hours;

—soaking in water for 24 hours at 20±3°C, boiling in water for 4 hours, drying in a ventilated ca binet for 16-20 hours, second boiling in water for 4 hours, cooling in water for 1 hour;

—soaking in water for 24 hours at 20±3°C, boiling for 72±1 hours, cooling in water for 1 hour; Preparation method is chosen by agreement with the customer.

3 Percentage of destruction in wood is determined visually

4 Shear testing is performed in different glue lines by agreement with the customer

5.4 Plywood stock is taken in cubic meters. One sheet's volume is calculated without regard to rounding. The volume of assembled plywood stacks and batches is calculated with an accuracy of 0.001 m3. The area of one plywood sheet is calculated with an accuracy of 0.01 m2, the area of the sheets in a batch - with an accuracy of 0.5 m2.

5.5 Marking is applied using indelible paint on the edge or face of each plywood sheet as a stamp or text without margins. Marking must include the following information:

- plywood type,
- plywood grade;
- manufacturer (number or name);
- thickness and/or sorter number.

The stamp on the sheet face is applied to right corner on the back side of the plywood sheet. The back side is the side with a lower grade outer ply.

The stamp on the sheet edge is applied to the corner of the longitudinal or transverse edge.

For plywood with a thickness of 3 to 9 mm, the stamp may be applied once per each (1-3) sheets.

Marking shall be applied in the following colors:

- for INT/ФК grade plywood - green;
- for EXT/ФСФ and EXT/МКФ grade plywood - purple.

Marking may be applied with another color with mandatory indication of the plywood grade.

By agreement between the manufacturer and the customer, the following are permissible:

- to not apply marking to plywood sheets;
- to not include additional information in the mandatory marking.

5.6 Plywood stacking

Plywood should be sorted into separate stacks (400, 600, and 900 mm high) based on grading. It is allowed to pack plywood into stacks of other heights, by agreement with the customer.

Plywood that is more than 3 mm thick must be placed in the stack in the same direction relative to the grain.

By agreement between the manufacturer and the customer, the plywood in the stack may be placed with the higher grade sheets on top.

5.7 Packaging and marking of ready plywood bundles

5.7.1 Plywood bundles should have proper packaging that ensures integrity and safety in transportation.

Various packaging types are allowed.

Bundles should be wrapped with packaging tape.

5.7.2 The packed bundles are marked using labels or stencils. The marking is applied in Russian and/or English on the two opposite and/or perpendicular side strips. The text content on the both strips is the same:

- trademark;
- product description, indicating face veneer timber species;
- plywood dimensions and thickness;
- plywood type (INT / ФК, EXT / ФСФ, EXT / МКФ);
- plywood grade as per Appendix B;
- type of mechanical treatment applied to plywood face;
- number of sheets in a bundle;
- working shift code;
- plywood production date;
- emission class;
- order No. as per Special Terms and Conditions (by agreement between the manufacturer and the customer);
- manufacturer name and address - when tags are used to mark stacks; country of manufacture - when a stencil is used to mark stacks;
- document, governing plywood manufacture;
- certification marks;
- quality assurance mark;
- handling signs: “Keep Dry” and “Use No Hooks”;
- barcode - if a data collection terminal (scanner) is available.

For warehousing convenience, additional marking is allowed with labels or stencils.

When bundles are marked using stencils the handling marks should be drawn on the side strips according to GOST 14192. When bundles are marked using labels the handling marks are specified in the label boxes.

6 ACCEPTANCE RULES

6.1 Plywood is accepted in bundles.

A bundle is a certain number of plywood sheets sorted by grade, type, emission class, surface processing type, and dimensions. A batch should come with a single document containing the following information:

—Trademark;

—Country of origin;

—Name and/or trademark of the manufacturing facility including its address;

—Plywood code;

—Batch size;

—Reference to the governing document for the product.

6.2 Plywood sheet quality and dimensions are controlled by sampling inspection. During this selective check, plywood sheets are sampled at random according to GOST 18321 in quantity specified in Table 6.

Table 6

In sheets

Batch size	Controlled value under items			
	4.2.1; 4.2.2; 4.2.3; 4.2.4		5.1.2; 5.1.5; 5.1.6	
	Sample size	Acceptance number	Sample size	Acceptance number
Up to 500	8	1	13	1
501 to 1,200	13	1	20	2
1.201 to 3,200	13	1	32	3
3,201 to 10,000	20	2	32	3

Sample size for items 4-12 of Table 4 is defined by agreement with the customer.

6.3 Ultimate shear strength along the glueline, ultimate static bending strength along and against the grain of face veneers, modulus of elasticity in static bending along and against the grain of face veneers, and moisture content are checked at least once a month for each grade, thickness and number of plies. Checking of each batch is allowed by agreement with the customer, for that purpose 0.1 % of the batch's sheets is sampled (at least one sheet).

6.4 Formaldehyde content value is monitored once per 30 days for EXT (FSF) plywood, and once per 15 days for INT (FK) plywood.

To monitor formaldehyde content and emission, one plywood sheet is picked from sample of any size. It is allowed to perform monitoring once per 7 days, by agreement with the customer.

6.5 A batch is considered to comply with the standard hereby and accepted if the following conditions are met by samples:

—The number of substandard plywood sheets in terms of dimensions, out-of-squareness, out-of-straightness, wood flaws, and processing defects is less or equal to the acceptance number specified in Table 6;

—All plywood sheets are free from blisters, delamination, and bark patch;

—Formaldehyde content and emission meets the requirement stated in Table 3.

7 QUALITY CONTROL METHODS

7.1 Sampling according to GOST 9620, 27678, [1]—[2].

7.2 Plywood length and width are measured at two points parallel to the edges, at least 100 mm from edges with a metal tape according to GOST 7502 with a tolerance of 1 mm. The arithmetic mean value of the two measurements is considered the actual length (width) of the sheet.

7.3 Thickness is measured with a thickness gauge according to GOST 11358, or a micrometer graduated in 0.01 according to GOST 6507, at least 25 mm from edges, in the middle of each sheet's face.

The arithmetic mean value of the two measurements is considered the actual thickness of the sheet.

Thickness difference in one plywood sheet is defined as the difference between the maximum and the minimum thickness of the four measurements.

7.4 7.4.1 Out-of-squareness in a plywood sheet is measured with an elbow in accordance with GOST 3749. Out-of-squareness is defined by measuring the maximum deviation of the sheet’s edges from the elbow’s surface using a metal ruler in accordance with GOST 427 with a tolerance of 1 mm.

7.4.2 It is allowed to define out-of-squareness as the difference of the sheet diagonal lengths measured using a metal measuring tape in accordance with GOST 7502 with a division value of 1 mm.

7.5 Out-of-straightness of a plywood sheet's edges is defined by measuring the maximum gap between the sheet's edge and the edge of the metal ruler using a probe according to GOST 8925 with a tolerance of 0.2 mm.

7.6 Warping according to GOST 30427.

7.7 Moisture content according to GOST 9621.

7.8 Ultimate shear strength along the glueline according to [3].

7.9 Ultimate static bending strength and modulus of elasticity in static bending according to [4].

7.10 Ultimate tensile strength according to GOST 9622.

7.11 Formaldehyde content according to GOST 27678 (used as the reference method), formaldehyde emission according to GOST 30255, [1].

7.12 Surface roughness according to GOST 15612.

7.13 Measuring of wood flaws and processing defects according to GOST 30427 and 2140.

7.14 Noise absorption factor according to GOST 16297.

7.15 Impact bending strength according to GOST 9626.

7.16 Sound insulation according to GOST 27296.

7.17 Hardness according to GOST 9627.1.

7.18 Biological stability according to [5].

7.19 Flammability class according to GOST 30244 and 12.1.044.

7.20 Heat transfer factor according to GOST 7076.

7.21 Water vapor resistance factor according to GOST 25898, [6].

8 STORAGE AND TRANSPORTATION

8.1 Plywood should be transported in closed vehicles according to the haulage rules applicable to the respective means of transport. During transportation it is necessary to avoid wetting the plywood to preclude changes in plywood geometry, physical parameters and quality, and the emission class stable.

8.2 Plywood storage.

Plywood is stored packed **in the form of horizontally stacked packages on pallets or wooden pads inside closed buildings at temperatures from -40 to +50°C and relative humidity not exceeding 80%.**

9 MANUFACTURER WARRANTY

The manufacturer guarantees conformance of plywood to the quality requirements hereby if transportation and storage conditions are satisfied.

INT (FK) grade plywood guaranteed shelf life is 3 years (5 years for EXT (FSF) grade plywood) following the day of receipt by customer.

If the plywood is to be used for further processing we recommend contacting the manufacturer for more details about the properties and specifications of various plywood grades and categories.

10 SAFETY AND ENVIRONMENTAL REQUIREMENTS

10.1 The content of hazardous chemicals emitted into residential or public building air during use of plywood products must not exceed requirements under items [7], [8], [9].

10.2 Plywood must be produced using materials and components allowed by the national sanitary and epidemiological inspection authorities.

10.3 Only persons age 18 and older with a clean bill of health are allowed to work in plywood production. Medical examinations are conducted according to the applicable instructions from the Ministry of Health of the Russian Federation.

10.4 People engaged in plywood manufacturing must be provided with personal protection equipment according to the applicable regulations under GOST 12.4.011.

10.5 Specific activity of Cesium 137 in plywood must not exceed health standards stated by requirements under [10].

10.6 The standard plywood composition does not include raw materials or components classified as hazardous waste.

10.7 Plywood usually has a long service life, and there are a number of ways to recycle it. Plywood must be recycled according to applicable local recycling laws and requirements.

APPENDIX A

(mandatory)

Code of restrictions on flaws in wood and processing defects in face veneers

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
1. Pin knots	Allowed										
2. Knots: sound, intergrown, light and dark	Not allowed		**Allowed: up to 15 mm in diameter, with a shake up to 0.5 mm wide, 5 pc/m^2**	Allowed **Allowed: up to 15 mm, with a shake up to 0.5 mm wide, 5 pc/m^2**	Allowed: up to 25 mm in diameter, with a shake up to 1 mm 10 pc/m^2		Allowed: with a shake up to 1 mm wide		Allowed		
3. Partially intergrown knots	Allowed, with size and amount according to Item 4 hereby				**Allowed within the total amount of intergrown knots up to 15 mm in diameter, 10 pc/m^2.**					Allowed: up to 40 mm in diameter, no amount restriction.	Allowed: up to 70 mm in diameter, no amount restriction.
4. Black knots, loose knots, knot holes (no bark inclusions)	Allowed: up to 6 mm in diameter, 2 pc/m^2		Allowed within the total amount of intergrown knots up to 6 mm in diameter, 3 pc/m^2.				Allowed: up to 6 mm in diameter, no amount restriction.		Allowed: up to 15 mm in diameter, 7 pc/m^2	Allowed: up to 40 mm in diameter, no amount restriction. (bark patches up to 5 mm wide around the knot are allowed)	Allowed: up to 70 mm in diameter, no amount restriction. (bark patches up to 5 mm wide around the knot are allowed)
5. Close shakes	Allowed up to 200 mm long, 2 pc/m of the sheet's width		Allowed up to 200 mm long, 5 pc/m of the sheet's width		Allowed: up to 300 mm long, 5 pc/m of sheet width.		Allowed: marginal and medial				

Appendix A continued

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
6. Open shakes, open splits in spliced veneer	Not allowed	Allowed: up to 200 mm long, up to 1 mm wide, 2 pc/m of the sheet's width	Not allowed	Allowed: up to 200 mm long, up to 1 mm wide, 2 pc/m of the sheet's width	Allowed up to 200 mm long, up to 2 mm wide, 3 pc/m of the sheet's width	Allowed up to 250 mm long, up to 2 mm wide, 3 pc/m of the sheet's width	Allowed up to 600 mm long, up to 2 mm wide, 2 pc/m of the sheet's width + allowed up to 600 mm long, up to 5 mm wide if sealed with putty.	Allowed up to 600 mm long, up to 2 mm wide, 2 pc/m of the sheet's width + allowed up to 600 mm long, up to 5 mm wide if sealed with putty.	Allowed up to 600 mm long, up to 5 mm wide, 2 pc/m of the sheet's width	Allowed up to 800 mm long, up to 10 mm wide, no amount restriction.	Allowed up to 15 mm wide, no amount restriction
7. Timber structure flaws (diagonal grain, swirly grain, burls, bud traces)	Allowed, except for dark bud traces		Allowed:								
8. Flaws in wood (inner inbark, light and dark)	Light inbark only is allowed, the dark one is allowed under size and amount requirements for black knots				Light inbark is allowed, the dark one is allowed under size requirements for intergrown knots						
9. Flaws in wood (open inbarks)	Allowed, within the total amount under the black knot requirements.										
10. Sound discoloration (false heartwood)	Not allowed				Allowed: up to 25% of the sheet surface.		Allowed: up to 75% of the sheet surface.				Allowed

Appendix A continued

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
11. Sound discoloration (streaks, streak traces)	Allowed: up to 100 mm long, up to 2 mm wide, 3 pc/m^2	Allowed: up to 175 mm long, up to 2 mm wide, 3 pc/m^2	Allowed: light up to 175 mm long, up to 4 mm wide, 3 pc/m^2	Allowed: light up to 175 mm long, up to 4 mm wide, 5 pc/m^2	Allowed up to 250 mm long, up to 10 mm wide, 10 pc/m^2		Allowed				
12. Sound discoloration (congested streaks)	Not allowed	Allowed: light-colored, up to 30x30 mm, 1 pc/m^2			Allowed: 60x40 mm, 1 pc/m^2		Allowed				
13. Mineral streaks, sap stains (blue, colored sap stains), wood discoloration during storage	Not allowed	Allowed: up to 5% of the sheet surface	Allowed: up to 30% of the sheet surface		Allowed: up to 50% of the sheet surface (together with false heartwood)		Allowed: up to 75% of the sheet surface (together with false heartwood)			Allowed	
14. Biological damage (wormholes)	Allowed within the total amount under the black knot requirements.										
15. Discoloration with partial wood damage	Not allowed										Allowed as separate stripes up to 30 mm wide, up to 200 mm long, 2 pc/m of the sheet's length

Appendix A continued

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
16. Knotting and patching with wooden inserts	Not allowed	Allowed: 1 pc/m^2	Not allowed	Allowed: up to 1 pc/m^2	Not allowed	Allowed: up to 8 pc/m^2	with a gap up to 1 mm at one side (or up to 0.5 mm at both sides)	Allowed with a gap up to 1 mm at one side (or up to 0.5 mm at both sides)	Allowed:		
17. Double patch	Not allowed					Allowed: up to 1 pc/m^2	Allowed				
18. Shake filling Note: Shake filling with patches or putty is subject to agreement with the customer.	Not allowed					Shakes wider than 2 mm must be filled with glued veneer patches.	Shakes wider than 5 mm must be filled with glued veneer patches.	Shakes wider than 5 mm must be filled with glued veneer patches.		Allowed	
19. Overlap ridges (telegraphing overlaps)	Not allowed				Allowed up to 200 mm long, up to 10 mm wide, 3 pc/sheet.		Allowed up to 600 mm long, up to 10 mm wide, 5 pc/sheet[2]		Allowed up to 10 mm wide	Allowed	
20 Overlap	Not allowed				Allowed up to 100 mm long, up to 2 mm wide, 1 pc/m of the sheet's width		Allowed up to 300 mm long, up to 2 mm wide, 2 pc/m of the sheet's width		Allowed: up to 600 mm long, up to 4 mm wide, 2 pc/m of the sheet's width	Allowed	
21 Manufacturing stains (beam traces, lines)	Not allowed				Allowed: up to 10% of a sheet's surface		Allowed				

Appendix A continued

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
22 Glue stain	Not allowed			Allowed: up to 1% of the sheet surface.	Allowed: up to 2% of the sheet surface (3 to 21 mm thick plywood) Allowed: up to 5% of the sheet surface (24 to 21 mm thick plywood)		Allowed: up to 5% of the sheet surface (3 to 21 mm thick plywood) Allowed: up to 10% of the sheet surface (24 mm thick and more)		Allowed: up to 5% of the sheet surface (3 to 21 mm thick plywood), up to 10% of the sheet surface (24 mm thick and more)	Allowed	
23 Mechanical defects (pinholes, saw cuts)	Allowed within the total amount under the black knot requirements.										
24 Scratches, grooves, pimples, ridges	Not allowed						Allowed: up to 0.5 mm deep, up to 120 mm long, up to 10 mm wide.	Allowed: 0.5 mm deep, up to 120 mm long, up to 10 mm wide.	Allowed up to 120 mm long	Allowed	
25 Warping	Ignored in plywood up to 6.5 mm thick, allowed in plywood over 6.5 mm thick; Allowed up to 10 mm/m of the plywood sheet's diagonal length.	Ignored in plywood up to 6.5 mm thick, allowed in plywood over 6.5 mm thick; Allowed up to 15 mm/m of the plywood sheet's diagonal length.									
26 Adhesive thread occurrence	Not allowed						Allowed				
27 Blisters, delamination, bark patches	Not allowed										

Appendix A continued

FLAWS IN WOOD AND PROCESSING DEFECTS	B Sel (I)	S Sel (I)	B (I)	S (I)	BBx (II)	BB (II)	CP (III)	WGE (III)	WG (III)	C (IV)	CC (IV)
28 Sander skips (uneven sanding)	Not allowed			Allowed: up to 5 mm off the edge			Allowed: up to 5% of the sheet surface			Allowed: up to 50% of the sheet surface	Allowed
29 Face veneer oversanding	Not allowed						Allowed: up to 1% of the sheet surface (3 to 21 mm thick plywood) Allowed: up to 2% of the sheet surface (24 mm thick and more)			Allowed: up to 5% of the sheet surface	
30 Metal inclusions	Not allowed						Allowed: nonferrous metal staples				
31 Edge defects caused by sanding, cutting (fringe), veneer shortage	Not allowed			Allowed: up to 5 mm wide along the edge						Allowed: up to 10 mm wide	Allowed: up to 25 mm wide
32 COARSE PEELING	Not allowed				Allowed: up to 5% of the sheet surface		Allowed: up to 15% of the sheet surface			Allowed	
33 Waviness (sanded plywood), rough saw cut, ripple	Not allowed						Allowed				
34 Rough surface	R_m roughness value according to GOST 7016, in pm, max: 100 for sanded plywood, 200 for unsanded plywood										
35. Pockets (without bark inclusions)	Not allowed				Allowed within congested streaks size (60x40 mm), **1 pc/m^2**		Allowed				
36. Pasted veneer chips	Not allowed						Allowed: up to 150 mm long, up to 30 mm wide, 1 pc/sheet.			Allowed	

APPENDIX B
(mandatory)

Plywood Grading Legend

Letters	Numeric letters	Lettering in Grade box of the label.
B/B	I/I	B/B (I/I)
S/S	I/I	S/S (I/I)
B Sel/B Sel	I/I	B Sel /B Sel (I/I)
S Sel/S Sel	I/I	S Sel /S Sel (I/I)
B/BB	I/II	B/BB (I/II)
B Sel /BB	I/II	B Sel /BB (I/II)
S/BB	I/II	S/BB (I/II)
S Sel /BB	I/II	S Sel /BB (I/II)
B/CP	I/III	B/CP (I/III)
B Sel /CP	I/III	B Sel /CP (I/III)
BB/C	II/IV	BB/C (II/IV)
BBx/C	II/IV	BBx/C (II/IV)
BB/BB	II/II	BB/BB (II/II)
BBx/BBx	II/II	BBx/BBx (II/II)
BB/CP	II/III	BB/CP (II/III)
BBx/CP	II/III	BBx/CP (II/III)
BB/WG	II/III	BB/WG (II/III)
BB/WGE	II/III	BB/WGE (II/III)
CP/CP	III/III	CP/CP (III/III)
WG/WG	III/III	WG/WG (III/III)
WGE/WGE	III/III	WGE/WGE (III/III)
CP/C	III/IV	CP/C (III/IV)
CP/CC	III/IV	CP/CC (III/IV)
C/C	IV/IV	C/C (IV/IV)
CC/CC	IV/IV	CC/CC (IV/IV)

References

[1] EH 717-1-1995	Wood boards. Determination of formaldehyde emission. Part 1 Determination of formaldehyde emission using test chamber
EH 717-2-1995	Wood boards. Determination of formaldehyde emission. Part 2 Determination of formaldehyde emission using gas analysis method
[2] EH 326-1-1994	Wood boards. Sampling, cutting, and quality control. Part 1 Testing sample selection and cutting, expressing test results
[3] EH 314-1:2004	Plywood. Gluing quality. Part 1. Testing methods
[4] EH 310:1993	Wood boards. Determination of the modulus of elasticity in bending, and the ultimate bending strength
[5] EH 1099-1997	Plywood. Biological stability. Guidelines for evaluating plywood for use with various hazard classes
[6] ISO 12572:2001	Hygrothermal specifications of construction materials and products. Determining the water vapor permeability performance
[7]GN 2.1.6.1338-03	Maximum admissible allowable concentrations in community air
[8] GN 2.1.6.2309-07	Suggested no-adverse-response levels in community air Hygienic regulations
[9] GN 2.1.6.2328-08	Supplement to GN 2.1.6.2309-07 Suggested no-adverse-response levels in community air. Hygienic regulations
[10]	Unified sanitary epidemiological and hygienic requirements for goods subject to sanitary and epidemiological control supervision approved by the Customs Union commission decision #299 as of 28.05.2010

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