CORPORATE STANDARD*

GENERAL PURPOSE BIRCH PLYWOOD
Technical Specifications

STO 52654419-001-2018

Saint Petersburg
2018

* In case of discrepancies, the Russian version of the organization's standard is to be considered as priority. / В случае возникновения разночтений приоритетной является версия стандарта организации на русском языке

Preface

Development purposes and objectives, as well as the use of corporate standards in the Russian Federation, are stated by Federal Law 184-FZ «*On Technical Regulation»* of December 27, 2002 and Federal Law of June 29, 2015.
No. 162-FZ «*On Standardization in the Russian Federation»*.

Development and execution rules are stated by GOST R 1.0-2012 «*Standardization in the Russian Federation*. *General provisions»* and GOST R 1.4-2004 «*Standardization in the Russian Federation*. *Corporate Standards. General Provisions»*, subject to GOST R 1.5-2012, «*Standardization In the Russian Federation. National standards. Regulations on arrangement, representation, execution, and designation»*.

Information on Standard

1 DEVELOPED AND INTRODUCED by SVEZA-Forest, a limited liability company

2 APPROVED AND ENACTED by order of the General Director of OOO SVEZA-Forest dated ____ _____ 20__ No. _____

3 FIRST RELEASE

4 APPROVED by OOO SVEZA Forest Sales and Marketing Director, R.A. Muzyka, August 21, 2018

5 THE EXPERT CONCLUSION, dated 24.05.2018, HAS BEEN RECEIVED from E.Yu. Tretyakova, Expert in the confirmation of the conformity of woodworking industry products, Head of the Fantest NP Certification Body, and member of Technical Committee on Standardization TK 121.

Contents

CORPORATE STANDARD

GENERAL PURPOSE BIRCH PLYWOOD. Technical Specifications

Birch plywood for general use Technical requirements

Effective since ____ _____, 20__

1 SCOPE

This corporate standard (hereinafter standard) applies to general purpose birch hardwood plywood (hereinafter birch plywood).

This standard may be used in the manufacture of specialty plywood.

2 REGULATORY REFERENCES

This standard hereby includes regulatory references to the following standards:

GOST 12.1.044-89 Occupational safety standards system. Fire and explosion hazard of substances and materials. Classification of parameters and methods of defining them

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

GOST 427-75 Metal rulers. Technical Specifications

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

GOST 3749-77 90° L-squares. Specifications

GOST 6507-90 Micrometers. Specifications

GOST 7016-2013 Products of wood and wooden materials. Surface roughness parameters

GOST 7076-99 Construction materials and products. Method of determining heat conductivity and heat transfer resistance in steady temperature conditions

GOST 7502-98 Metal measuring tapes. Technical Specifications

GOST 8925-68 Feeler gauges for machine tool accessories. Design

GOST 9620-94 Glued laminated timber. Sampling and general requirements for testing

GOST 9621-72 Glued laminated timber. Methods for determination of physical properties

GOST 9622-2016 Glued laminated timber. Methods for determination of tensile strength and modulus of elasticity

GOST 9624-2009 Glued laminated timber. Method for determination of shear strength

GOST 9625-2013 Glued laminated timber. Methods for determination of strength and modulus of elasticity in static bending.

GOST 9626-90 Glued laminated timber. Method of determining impact bending strength

GOST 9627.1-75 Glued laminated timber. Method of determining hardness

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

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

GOST 16297-80 Sound-insulating and soundproof materials. Test methods

GOST 18321-73 Statistical quality control. Random sampling methods for piece goods

GOST 25898-2012 Construction materials and products. Methods of determining water vapor permeability resistance

GOST 27296-2012 Buildings and structures. Methods of measuring wall sound insulation

GOST 27678-2014 Wood panels and plywood. Perforation method for determination of formaldehyde content.

GOST 30244-94 Construction materials. Methods of testing fire behavior

GOST 30255-2014 Furniture, wood, and polymer materials. Method for determination of formaldehyde and other volatile chemicals in the air of climate chambers

GOST 30427-96 General purpose plywood. General requirements for classification by appearance

GOST 32155-2013 Wood panels and plywood. Determination of formaldehyde emissions by gas analysis method

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

3 TERMS AND DEFINITIONS

This standard hereby includes terms as follows:

General purpose birch plywood (birch plywood) – plywood with outer plies of birch veneer and inner plies of birch or other hardwood.

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

4 CLASSIFICATION AND DIMENSIONS

4.1 Birch veneer classification depends on the:

— appearance of the outer plies surface;

— water resistance of the glue bonds; and

— degree of surface machining.

4.1.1 Regarding its external appearance, birch plywood falls into grades according to the combination of its face veneer grades: B Sel, B, S Sel, S, BBx, BB, CP, WGE, WG, C, CC (Latin letters) and I, II, III, IV (Roman numerals).

The grade designator is indicated by both Latin letters and Roman numerals.

Birch plywood of B Sel, B, S Sel, and S grade qualifies as grade I; birch plywood BBx and BB as grade II; birch plywood CP, WGE and WG as grade III; and birch plywood C and CC as grade IV.

Note: for birch plywood with inner plies of another hardwood veneer, the grade designation is preceded by two letters of the Latin designation for the used hardwood (for example, in an instance of aspen veneer use for the inner plies, the grade designation is preceded by As (Aspen)).

4.1.2 As regards the water resistance of glue joints and conditions of use, the birch plywood shall be divided into the following types:

— INT/FK – water-resistant birch plywood, glued using carbamide-formaldehyde adhesives and meant for indoor use;

— EXT/FSF – birch plywood with enhanced water resistance of the glue joint, glued using phenol-formaldehyde adhesives, and intended for indoor and outdoor use;

— EXT/MKF – birch plywood with enhanced water resistance of the glue joint, glued using melamine-carbamide-formaldehyde adhesives, for indoor and outdoor use.

Note: birch plywood of INT/FK type qualifies as a INT formaldehyde emission group and birch plywood of the EXT/FSF type qualifies as the EXT formaldehyde emission group.

4.1.3 As regards the degree of surface machining, the birch plywood is divided into:

— unsanded, NS/NS; and

— sanded on both sides, S2S/S2.

4.2 Dimensions

4.2.1 Length and width of birch plywood sheets must be as shown in Table 1 below.

Table 1

In mm

Length and width of birch plywood sheets	Maximum deviation
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. Birch plywood may be produced with other dimensions and maximum deviations upon agreement between the manufacturer and the customer.
2. The birch plywood sheet length is measured along the grain of the face veneers.
3. Manufacturing SHOP plywood is permitted.

4.2.2 Birch plywood thickness and number of plies must be as shown in Table 2 below.

Table 2

In millimeters

Nominal thickness of birch ply-wood	Number of plies	Sanded birch plywood		Unsanded birch plywood	
		Maximum deviation	Thickness variation, max	Maximum deviation	Thickness variation, max
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	

Table 2 (end)

<table>
<tr><th rowspan="2">Nominal thickness of birch plywood</th><th rowspan="2">Number of plies</th><th colspan="2">Sanded birch plywood</th><th colspan="2">Unsanded birch plywood</th></tr>
<tr><th>Maximum deviation</th><th>Thickness variation, max</th><th>Maximum deviation</th><th>Thickness variation, max</th></tr>
<tr><td>8</td><td>6 and 7</td><td>+ 0.4
- 0.5</td><td rowspan="8">0.6</td><td>+ 1.0
- 0.5</td><td rowspan="4">1.0</td></tr>
<tr><td>9</td><td>7</td><td>+ 0.4
- 0.6</td><td>+ 1.0
- 0.5</td></tr>
<tr><td>10</td><td>7 and 8</td><td>+ 0.5
- 0.6</td><td>+ 1.0
- 0.5</td></tr>
<tr><td>12</td><td>9</td><td>+ 0.5
- 0.7</td><td>+ 1.1
- 0.6</td></tr>
<tr><td>15</td><td>11</td><td>+ 0.6
- 0.8</td><td>+ 1.2
- 0.7</td><td rowspan="3">1.5</td></tr>
<tr><td>18</td><td>13</td><td>+ 0.7
- 0.9</td><td>+ 1.3
- 0.8</td></tr>
<tr><td>21</td><td>15</td><td>0.0
- 1.1</td><td>+1.0
- 1.1</td></tr>
<tr><td>24</td><td>17</td><td>0.0
- 1.5</td><td>+1.0
- 1.5</td></tr>
<tr><td>27</td><td>19</td><td>0.0
- 1.8</td><td rowspan="4">1.0</td><td>+1.5
- 1.8</td><td rowspan="4">2.0</td></tr>
<tr><td>30</td><td>21</td><td>0.0
- 2.0</td><td>+1.6
- 2.0</td></tr>
<tr><td>35</td><td>25</td><td>0.0
- 2.0</td><td>+1.6
- 2.0</td></tr>
<tr><td>40</td><td>28 and 29</td><td>+ 1.2
- 1.2</td><td>+1.6
- 2.0</td></tr>
<tr><td colspan="6">Notes:
1. Birch plywood with an even number of plies has two internal, adjacent plies parallel to the grain.
2. Birch plywood may be produced with different thicknesses, number of plies, and tolerance limits upon agreement between the manufacturer and the customer.</td></tr>
</table>

4.2.3 Birch 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 for the edges must not exceed 2 mm per 1 m of sheet length.

4.3 The reference designation for birch plywood must include the following information:

— product name;
— grade;
— combination of face veneer grades (using Latin letters and Roman numerals);
— emission class;
— surface treatment type;
— dimensions;
— this Standard number.

Designation example for birch plywood INT/FK, of B/BB (I/II) grade, emission class E1, both sides sanded, 1,525 mm in length, 1,525 mm wide, and 10 mm thick:

Birch Plywood,
INT/FK B/BB (I/II), E1, S2S/S2, 1,525 x 1,525 x 10
STO 52654419-001-2018

Designation example for birch plywood with inner plies of aspen veneer of EXT/FSF type, As CP/C (III/IV) grade, E1 emission class, both sides sanded, 2,500 mm in length, 1,250 mm wide, and 18 mm thick:

Birch Plywood,
EXT/FSF, As CP/C (III/IV), E1, S2S, 2500 x 1250 x 18
STO 52654419-001-2018

5 TECHNICAL REQUIREMENTS

5.1 Characteristics

5.1.1 The following materials are used in the manufacture of birch plywood:

— birch veneer for manufacturing outer plies
— birch or other hardwood veneer for manufacturing inner plies

Veneer thickness of the external and inner plies of birch plywood must not exceed 4 mm.

5.1.2 Flaws in the wood and processing defects that exceed the limits specified in Appendix A are not permitted in external birch plywood plies.

Terms and definitions of wood flaws and processing defects — as per GOST 30427 and Appendix C.

Tolerances on flaws in the wood and processing defects for special purpose plywood are determined per the agreement between the manufacturer and the customer.

5.1.3 In inner plies of birch plywood, flaws in the wood and processing defects that do not affect plywood quality or dimensions, the requirements for which are set forth in this standard, are permitted.

5.1.4 Birch plywood is available in any combination of the grades mentioned in clause 4.1.2, depending on the quality of the outer plies.

5.1.5 It is permitted to compose external plies of B Sel, B, S Sel, S, BBx, and BB grades from two or three strips of veneer of the same width and color. External plies of grades CP, WGE, WG, C, and CC may be composed from an unlimited number of veneer strips without color matching.

5.1.6 Knots, holes, and cracks shall be filled with veneer inserts of various shapes and sizes. Defect areas up to 30 mm wide may be filled with rectangular veneer inserts through the full length of defect. For CP grade and below, a combination of inserts of different shape permitted on the same sheet surface upon agreement between the customer and the manufacturer.

The veneer inserts must be attached firmly, match the surface, and correspond to the timber species of the birch plywood outer ply. For S Sel, S and BB grades, the insert should match the wood color and grain direction of the external ply of birch plywood.

The filler must match the timber color, ensure bonding of the finishing material, not flake and bend without cracking during birch plywood machining.

5.2 Formaldehyde content in the birch plywood and formaldehyde emission from birch plywood into the room air must comply with the value specified in Table 3.

Table 3

Emission class	Formaldehyde content per 100 grams of absolutely dry weight of birch plywood (mg)	Formaldehyde emission	
		Chamber method (mg/m^3 of air)	Gas analysis method (mg/m^2·h)
E1	Up to 8.0 inclusively	Up to 0.124	Up to 3.5 inclusive, or less than 5.0 at 3 days after manufacturing

5.3 For physical and mechanical properties of birch plywood, see Tables 4 and 5.

Table 4

Parameter	Thickness (mm)	Physical and mechanical parameter values
1 Moisture (%)	3–40	5–12
2 Static bending strength: — along the grain of face plies (MPa), min	9–40	
INT/FK type birch plywood		45
EXT/FSF type birch plywood		60
EXT/MKF type birch plywood		60
— across the grain of face plies (MPa), min		
INT/FK type birch plywood		30
EXT/FSF type birch plywood		30
EXT/MKF type birch plywood		30
3 Modulus of elasticity in static bending: — along the grain (MPa), min	9–40	
INT/FK type birch plywood		5,000
EXT/FSF type birch plywood		6,000
EXT/MKF type birch plywood		6,000
— across the grain (MPa), min		
INT/FK type birch plywood		3,000
EXT/FSF type birch plywood		3,000
EXT/MKF type birch plywood		3,000
4 Tensile strength along the grain (MPa), min	3–6.5	30
5 Impact bending strength, KJ/m^2, minimum	9–40	34
6 Hardness, MPa, minimum	9–40	20
7 Heat conduction coefficient, W (mK), at average density, kg/m^3	3–40	
300		0.09
500		0.13
700		0.17
1,000		0.24

Table 4 (end)

Parameter	Thickness (mm)	Physical and mechanical parameter values
8 Water vapor resistance coefficient in wet-cup tests at average density, kg/m^3		
300		50
500		70
700		90
1,000		110
Water vapor resistance coefficient in dry-cup tests at average density, kg/m^3	3–40	
300		150
500		200
700		220
1,000		250
9 Acoustic absorption coefficient, dB, in a frequency range, Hz	3–40	
250–500		0.10
1,000–2,000		0.30
10 Sound insulation, dB	6.5–40	23.0
11 Biological stability, hazard class	3–40	5fDa, St
12 Fire behavior class	3–40	per GOST 30244
Note - values of clauses 4-12 shall be selected by agreement between the manufacturer and the customer.		

Table 5

Average value of shear strength through adhesive layer (MPa)	Percentage of destruction in wood
Above 0.2 up to 0.4 inclusively	Greater than or equal to 80
Above 0.4 up to 0.6 inclusively	Greater than or equal to 60
Greater than 0.6 but less than 1.0	Greater than or equal to 40
1.0 and more	-

Notes:
1. Tests of INT/FK grade birch plywood shall be performed after soaking samples in water at (20 ± 3) °C for 24 hours.
2. Preparation for testing of EXT/FSF and EXT/MKF grade plywood shall be performed using one of four methods:
2.1 boiling in water for 1 hour;
2.2 boiling in water for 6 hours;
2.3 boiling in water for 4 hours, drying in a vented cabinet at (60 ± 3) °C temperature for (16–20) hours, repeated soaking in boiling water for 4 hours and cooling in (20 ± 3) °C water for 1 hour;
2.4 boiling in water for (72 ± 1) hours, cooling in (20 ± 3) °C water for 1 hour - once every 3 months;
2.5 soaking in water at a temperature of (20 ± 3) °C for 24 hours, once quarterly.
Methods 2.3, 2.4, and 2.5 are used for preparing EXT/FSF and EXT/MKF grade birch plywood for new resins testing.
The method of preparing samples shall be selected by agreement of the manufacturer with the customer.
3. Percentage of destruction in wood is determined visually
4. The shear test shall be performed in various adhesive layers by agreement between the manufacturer and customer.

5.4 Birch plywood stock is recorded in cubic meters. One sheet's volume is calculated without regard to rounding. The volume of assembled plywood stacks and batches is calculated with accuracy of 0.001 m^3. The area of a single birch plywood sheet is calculated with 0.01 m^2 accuracy, and the area of sheets in a batch is calculated with 0.5 m^2 accuracy.

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

— type of birch plywood;
— grade of birch plywood;
— manufacturer (number or name);
— thickness and/or sorter number.

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

Edge stamp is placed in the corner of the transverse or longitudinal edge.

For birch plywood with a thickness of 3 to 9 mm, the stamp may be placed once for every (1-3) sheets.

Marking shall be applied in the following colors:

— green for INT/FK grade birch plywood

— purple for EXT/FSF and EXT/MKR grade birch plywood

The marking may be applied in another color with the mandatory indication of the birch plywood grade.

Allowable by agreement between the manufacturer and the customer to not:

— mark birch plywood sheets;

— include additional information in the mandatory marking.

5.6 Packing Birch Plywood

The birch plywood should be packed in 400, 600 or 900 mm high stacks according to wood species, types, grades, dimensions, thickness, and types of surface machining.

Upon agreement between the manufacturer and the customer, the birch plywood may be packed in stacks of a height other than that specified.

Birch plywood more than 3 mm thick must be placed in the stack in the same direction relative to the grain.

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

5.7 Packing and labeling ready stacks of birch plywood

5.7.1 Packing for birch plywood stacks shall ensure their integrity and protect the stacks during transport.

Main packing methods and types are regulated by OOO SVEZA-Forest. Other types and methods of packing birch plywood packing may be used upon agreement between the manufacturer and the customer.

5.7.2 Packed birch plywood stacks shall be marked with labels. The label text shall be in Russian and/or English, placed on two parallel or perpendicular side strips. Both labels shall bear the same information:

— trademark;

— product designation - Birch Plywood / Фанера березовая;

— dimensions, birch plywood thickness and thickness tolerance value (if required);

— birch plywood grade as per Appendix B;

— birch plywood type (INT/FK, EXT/FSF, EXT/MKF);

— type of machining used for the birch plywood face;

— number of sheets in a stack;

— working shift;

— birch plywood production date;

— emission class;

— order No. as per Special Terms and Conditions (by agreement with the customer);

— reference document governing the manufacture of birch plywood;

— manufacturer name and address;

— certification signs and quality control marks;

— handling signs: “Keep Dry” and “Use No Hooks”;

— barcode (if a data collection terminal (scanner) is available).

For more streamlined storage operations, additional marking may be applied using labels or stencils.

5.7.3 Packed stacks of birch plywood with different marketing designations shall labeled as agreed by manufacturer and consumer.

6 ACCEPTANCE REQUIREMENTS

6.1 Birch plywood must be accepted in lots.

Lot means a certain number of birch plywood sheets with a single wood species, type, grade, dimension, thickness, and surface finish type. For each lot, a single supporting document must be issued, containing the following information:

— trademark;

— manufacturer name and address;

— birch plywood designation;

— lot size;

— reference document governing the manufacture of birch plywood.

6.2 Checking the quality and dimensions of birch plywood sheets shall be done through selective sampling and testing. In a sampling inspection, sheets of birch plywood are selected as a “random” sampling per GOST 18321 in the quantity stated in Table 6.

Table 6

In sheets

Lot size	Checked parameter as per sections herein			
	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
501-1,200	13	1	20	2
1,201-3,200	13	1	32	3
3,201-10,000	20	2	32	3

The definition of sampling scope for subsections (4-12) of Table 4 is as by agreement between the manufacturer and the customer.

6.3 Moisture, strength limit when cleaving through the adhesive layer, strength limit during static bending across and along the outer veneers, and module of elasticity for static bending along and across the grains of the outer veneers should be inspected for each type, thickness and number of plies of birch plywood at least once per month. Checking of each lot is allowed as agreed by the manufacturer with the customer, and for this purpose 0.1% of sheets shall be selected from the lot, but at least one sheet.

6.4 One birch plywood sheet shall be selected from any sampling volume for the purpose of testing the formaldehyde content and/or emission.

The formaldehyde content parameter for birch plywood shall be monitored:

— at least once every 30 days for the EXT/FSF type;

— at least once every 15 days for the types INT/FK and EXT/MKF.

The formaldehyde emission parameter shall be monitored at least once every 7 days for each formaldehyde emission group.

6.5 The necessity of test performance, frequency and scope of testing as per parameter of Sections (4-12) of Table 4 shall be set by agreement between the manufacturer and the customer.

6.6 The lot is considered compliant to the applicable requirements of the standard and is accepted, provided that in the samples:

— the number of birch plywood sheets in non-compliance with the standard requirements for dimensions, squareness, straightness, wood defects, and processing defects shall be less than or equal to the acceptance number established in Table 6;

— all sheets of birch plywood are free of blisters, ply splitting, or bark patches;

— the formaldehyde content and/or emission is compliant with limits set forth in Table 3.

7 TEST METHODS

7.1 Sampling procedure — as per GOST 9620, GOST 27678, GOST 30255, GOST 32155, [1], [2].

7.2 Birch plywood length and width are measured with a metal measuring tape at two points parallel to the edges, at least 100 mm from edges, 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 The thickness shall be measured at least 25 mm from the edges, in the middle of each sheet's face.

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

The following devices are used for thickness measurement:

— thickness gauge as per GOST 11358 with a scale division not exceeding 0.1 mm;

— micrometer as per GOST 6507 with a scale division not exceeding 0.1 mm.

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

7.4 Out-of-squareness of birch plywood sheets

7.4.1 Out-of-squareness of birch plywood sheets shall be measured per GOST 30427. The out-of-squareness value sheet shall be measured with an L-square as per GOST 3749. Out-of-squareness is defined by measuring the maximum deviation of the sheet edges from the L-square surface using a metal ruler in accordance with GOST 427 with an error of 1 mm.

7.4.2 Out-of-squareness may be also determined by the difference of diagonal lines of the sheet measured by metal measuring tape as per GOST 7502 with a scale division 1 mm.

7.5 Out-of-straightness of a birch plywood sheet edge shall be determined by using a probe to measure 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 — as per GOST 30427.

7.7 Moisture — as per GOST 9621, [3].

7.8 Strength limit for shearing through adhesive layer — as per GOST 9624, [4].

7.9 Modulus of elasticity in static bending and strength limit as per GOST 9625, [5].

7.10 Tensile strength along the grain — as per GOST 9622.

7.11 Formaldehyde content — as per GOST 27678, formaldehyde release into the environment — as per GOST 30255, GOST 32155 and [1].

7.12 Surface roughness — as per GOST 15612.

7.13 Measurement of wood flaws and processing defects as per GOST 30427 and GOST 2140.

7.14 Acoustic absorption coefficient — as per GOST 16297.

7.15 Impact bending strength — as per GOST 9626.

7.16 Sound insulation — as per GOST 27296.

7.17 Hardness — as per GOST 9627.1.

7.18 Biological stability — as per [6].

7.19 Fire behavior class — as per GOST 30244 and GOST 12.1.044.

7.20 Heat conduction coefficient — as per GOST 7076.

7.21 Water vapor resistance coefficient — as per GOST 25898, [7].

7.22 Other monitoring methods may be used upon agreement between the manufacturer and the customer.

8 TRANSPORTATION AND STORAGE

8.1 Birch plywood shall be transported in closed transport vehicles, in accordance with the haulage rules applicable to the respective means of transport.

Contact with moisture should be avoided during transportation to avoid changes in geometry, physical parameters and quality of the birch plywood, and in order to keep the emission class stable.

8.2 Storage of birch plywood

The birch plywood must be stored indoors in stacks placed horizontally on pallets or on wooden shims, at a temperature between −40 °C and +50 °C and a relative humidity up to 80%.

9 MANUFACTURER’S WARRANTY

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

The guaranteed shelf life for INT/FK and EXT/MKF type birch plywood is 3 years, and 5 years for EXT/FSF type birch plywood from the day of receipt by the customer.

For birch plywood used for further processing, contacting the manufacturer for more details about the properties and specifications of different types of birch plywood is recommended.

10 SAFETY AND ENVIRONMENTAL REQUIREMENTS

10.1 The content of hazardous chemicals emitted into the air of residential or public buildings with the use of birch plywood products must not exceed requirements in items [8], [9], and [10].

10.2 Birch plywood must be produced using materials and components approved by the national sanitary and epidemiological inspection authorities.

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

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

10.5 The specific activity of cesium-137 in birch plywood must not exceed the health standards set forth in [11].

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

10.7 Birch plywood usually has a long service life, and there are a number of ways to recycle it. Birch plywood must be recycled according to the ordinances regarding recycling in the effective laws of various countries.

APPENDIX A
(mandatory)

Limits on flaws in wood and processing defects in face layers of birch plywood

See Table A.1 for limits on flaws in the wood and processing defects in face layers of birch plywood

Table A.1

WOOD FLAWS 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	allowable										
2. Sound knots, intergrown, light and dark	not allowable		light knots up to 15 mm in diameter, with cracks up to 0.5 mm wide and no more than 5 per m^2, are allowed	allowable up to 15 mm in diameter with cracks up to 0.5 mm wide, no more than 5 per m^2	allowable up to 25 mm in diameter with cracks up to 1 mm wide, no more than 10 per m^2		allowable: with a crack up to 1.5 mm in width	allowable: with a crack up to 1 mm in width	allowable		
3. Partially intergrown knots	allowed within the number of par. 4 of this appendix, up to 6 mm in diameter, 2 per m^3 maximum		allowed within the number of par. 4 of this appendix, up to 6 mm in diameter, 3 per m^3 maximum	allowed within the number of par. 4 of this appendix, up to 6 mm in diameter, 2 per m^3 maximum	intergrown knots up to 15 mm in diameter, 10 per m^2 maximum — allowed					allowable: any number with a diameter up to 40 mm	allowable: any number with a diameter up to 70 mm

Appendix A — continued

FLAWS IN WOOD AND PRO-CESSING 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)
4. Black knots, loose knots, knot holes (no bark inclusions)	allowable: up to 6 mm in diameter, 2 per m^2 maximum		allowed, including intergrown knots up to 6 mm in diameter, 3 per m^2 maximum			allowed, in-cluding intergrown knots up to 6 mm in diameter, 6 per m^2 maximum	allowable: any number with a diameter up to 6 mm		allowable up to 15 mm in diameter, no more than 7 per m^2	allowable: any number with a diameter up to 40 mm (bark patches up to 5 mm wide are allowed near the knot)	allowable: any number with a diameter up to 70 mm (bark patches up to 5 mm wide are allowed near the knot)
5. Closed cracks	allowable: up to 2 per meter of the sheet width, up to 200 mm long		allowable: up to 5 per meter of the sheet width, up to 200 mm long		allowable: up to 5 per meter of the sheet width, up to 300 mm long		edge and middle cracks are allowable				
6. Open cracks, an open joint on a spliced veneer	not allowable	allowable: up to 2 per meter of the sheet width, up to 200 mm long and up to 1 mm wide	not allowable	allowable: up to 2 per meter of the sheet width, up to 200 mm long and up to 1 mm wide	allowable: up to 3 per meter of the sheet width, up to 200 mm long and up to 2 mm wide	allowable: up to 3 per meter of the sheet width, up to 250 mm long and up to 2 mm wide	allowable: up to 2 per meter of the sheet width, up to 600 mm long and up to 2 mm wide + allowa-ble up to 600 mm long and up to 5 mm wide, provided it is filled with a sealing agent		allowable: up to 2 per meter of the sheet width, up to 600 mm long and up to 5 mm wide	allowable: up 800 mm long and up to 10 mm wide, no limitation on number	allowable: up to 15 mm wide, no limitation of number
7. Timber structure flaws (diagonal grain, swirly grain, burls, or bud traces)	allowable, except for dark bud traces		allowable								

Appendix A — continued

FLAWS IN WOOD AND PRO-CESSING 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)
8. Timber structure flaws (light/dark inner inbark)	only light inbark is allowable, dark inbark is allowable in the number and size corresponding to the number of black knots				light inbark is allowable, dark inbark is allowable within the dimensions of jointed knots						
9. Timber structure flaws (surface inbark)	allowable: with the total number under the black knot requirements										
10. Heavy discoloration (false heartwood)	not allowable				allowable: up to 25% of the sheet surface area		allowable	allowable: up to 75% of the sheet surface area	allowable		
11. Heavy discoloration (stains, streaks, streak traces)	allowable: light, no more than 3 per m^2 of the sheet, up to 100 mm long and up to 2 mm wide	allowable: light, no more than 3 per m^2 of the sheet, up to 175 mm long and up to 2 mm wide	allowable: light, up to 15% of the sheet surface area	allowable: light, no more than 5 per m^2 of the sheet, up to 175 mm long and up to 4 mm wide	allowable: up to 250 mm long and up to 10 mm wide, no more than 10 per m^2	allowable					
12. Heavy discoloration (grouped streaks)	not allowable	allowable: light, up to 30x30 mm, no more than 1 per m^2	allowable: light, up to 15% of the sheet surface area	allowable: light, up to 30x30 mm, no more than 1 per m^2	allowable: up to 60x40 mm, no more than 1 per m^2	allowable					

Appendix A — continued

FLAWS IN WOOD AND PRO-CESSING 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)
13. Chemical color-ations, sap stains (blue and colored sap stains), discoloration after storage that do not com-promise the wood integrity	not allowable	allowable: up to 5% of the surface	allowable: up to 30% of surface		allowable: up to 50% of the sheet surface area (false heart-wood included)	allowable		allowable: up to 75% of the sheet surface area (false heartwood included)		allowable	
14. Biological damage (wormholes)	allowable within the total number under the black knot requirements										
15. Discoloration with partial wood integrity damage	not allowable										allowable as separate strips up to 30 mm in width and up to 200 mm in length, max 2 per meter of the sheet length
16. Patching of knots and holes with wood inserts	not allowable	allowable: no more than 1 per m^2	not allowable	allowable: no more than 1 per m^2	not allowable	allowable: no more than 8 per m^2	allowable, with a 1 mm gap from one side or 0.5 mm gap from both sides	allowable			

Appendix A — continued

FLAWS IN WOOD AND PRO-CESSING 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)
17. Double insert	not allowable					allowable: no more than 1 per m^2	allowable				
18. Patching of cracks Note: patching of cracks with sealing agents or inserts - by agreement with the customer.	not allowable					open shakes wider than 2 mm must be patched with glued veneer inserts	open cracks wider than 5 mm must be patched with glued veneer inserts			allowable	
19. Faceplate bulges (imprinted)	not allowable				allowable: up to 200 mm long and up to 10 mm wide, no more than 3 per sheet		allowable: up to 600 mm long and up to 10 mm wide, no more than 5 per sheet		allowable: up to 10 mm wide	allowable	
20. Overlaps	not allowable				allowable: up to 1 per meter of the sheet width, up to 100 mm long and up to 2 mm wide		allowable: up to 2 per meter of the sheet width, up to 300 mm long and up to 2 mm wide		allowable: up to 2 per meter of the sheet width, up to 600 mm long and up to 4 mm wide	allowable	
21. Stains from manufacturing (beam traces, strips)	not allowable				allowable: up to 10% of the sheet surface area		allowable				

Appendix A — continued

FLAWS IN WOOD AND PRO-CESSING 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 penetration	not allowable			allowable: up to 1% of the sheet surface area	allowable: up to 2% of the sheet surface area (for sheets 3–21 mm thick) allowable: up to 5% of the sheet surface area (for sheets min. 24 mm thick)		allowable: up to 5% of the sheet surface area (for sheets 3–21 mm thick) allowable: up to 10% of the sheet surface area (for sheets min. 24 mm thick)		allowable: up to 10% of the sheet surface area (for sheets 3–21 mm thick) allowable: up to 15% of the sheet surface area (for sheets min. 24 mm thick)	allowable	
23. Mechanical damage (cuts, holes)	allowable within the total number under the black knot requirements										
24. Scratches, ribs, blows, ridges	not allowable						allowable: up 120 mm long, 10 mm wide and 0.5 mm in height (depth)		allowable: up to 120 mm long	allowable	
25. Warping	not considered for plywood up to 6.5 mm thick; no more than 10 mm per 1 m of sheet diagonal is allowable for plywood thicker than 6.5 mm	not considered for plywood up to 6.5 mm thick; no more than 15 mm per 1 m of sheet diagonal is allowable for plywood thicker than 6.5 mm									

Appendix A — continued

<table>
<tr><th>FLAWS IN WOOD AND PRO-CESSING DEFECTS</th><th>B Sel
(I)</th><th>S Sel
(I)</th><th>B
(I)</th><th>S
(I)</th><th>BBx
(II)</th><th>BB
(II)</th><th>CP
(III)</th><th>WGE
(III)</th><th>WG
(III)</th><th>C
(IV)</th><th>CC
(IV)</th></tr>
<tr><td>26. Presence of glue line</td><td colspan="6">not allowable</td><td colspan="5">allowable</td></tr>
<tr><td>27. Blisters, delamination, bark patches</td><td colspan="11">not allowable</td></tr>
<tr><td>28. Unsanded stains (nonuniform sand-ing)</td><td colspan="3">not allowable</td><td colspan="3">allowable: within 5 mm from the edge</td><td colspan="3">up to 5% of the surface — allowable</td><td>allowable: up to 50% of the sheet surface area</td><td>allowable</td></tr>
<tr><td>29. Oversanding of surface plies</td><td colspan="6">not allowable</td><td colspan="3">allowable: up to 1% of sheet surface area (for sheets 3–21 mm thick)

allowable: up to 2% of sheet surface area (for sheets min. 24 mm thick)</td><td colspan="2">allowable</td></tr>
<tr><td>30. Metal inclusions</td><td colspan="6">not allowable</td><td colspan="5">brackets of non-ferrous metals are allowable</td></tr>
<tr><td>31. Edge defects caused by sanding, trimming, or lack of veneer</td><td colspan="3">not allowable</td><td colspan="6">up to 5 mm wide along sheet edge</td><td>allowable: up to 10 mm wide</td><td>allowable: up to 25 mm wide</td></tr>
<tr><td>32. Rough peeling</td><td colspan="4">not allowable</td><td colspan="2">allowable: up to 5% of the sheet surface area</td><td colspan="3">up to 15% of the surface — allowable</td><td colspan="2">allowable</td></tr>
</table>

Appendix A — end

FLAWS IN WOOD AND PRO-CESSING 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)
33. Waviness (for sanded plywood), roughness, ripple	not allowable						allowable				
34. Surface rough-ness	the roughness parameter, R_m, per GOST 7016 (μm), maximum: 100 for sanded birch plywood, 200 for unsanded										
35. Pockets (no bark inclusions)	not allowable				allowable, within the total number under the require-ments of par. 12 of this appendix		allowable				
36. Glued veneer particles	not allowable						allowable: up to 150 mm long and 30 mm wide, no more than 1 per sheet			allowable	

Note: Any wood flaws and processing defects not specified in Appendix A are not permissible.

APPENDIX B
(mandatory)

Birch Plywood Grade Designations

Grade designations for birch plywood are presented in Table B.1

Table B.1

Latin Letters	Roman Numerals	Label text in the “Grade” column for birch plywood	Label text in the “Grade” box for birch plywood with inner plies of birch and aspen veneer
B/B	I/I	B/B (I/I)	As B/B (I/I)
S/S	I/I	S/S (I/I)	As S/S (I/I)
B Sel/B Sel	I/I	B Sel /B Sel (I/I)	As B Sel /B Sel (I/I)
S Sel/S Sel	I/I	S Sel /S Sel (I/I)	As S Sel /S Sel (I/I)
B/BB	I/II	B/BB (I/II)	As B/BB (I/II)
B Sel /BB	I/II	B Sel /BB (I/II)	As B Sel /BB (I/II)
S/BB	I/II	S/BB (I/II)	As S/BB (I/II)
S Sel /BB	I/II	S Sel /BB (I/II)	As S Sel /BB (I/II)
B/CP	I/III	B/CP (I/III)	As B/CP (I/III)
B Sel /CP	I/III	B Sel /CP (I/III)	As B Sel /CP (I/III)
BB/C	II/IV	BB/C (II/IV)	As BB/C (II/IV)
BBx/C	II/IV	BBx/C (II/IV)	As BBx/C (II/IV)
BB/BB	II/II	BB/BB (II/II)	As BB/BB (II/II)
BBx/BBx	II/II	BBx/BBx (II/II)	As BBx/BBx (II/II)
BB/CP	II/III	BB/CP (II/III)	As BB/CP (II/III)
BBx/CP	II/III	BBx/CP (II/III)	As BBx/CP (II/III)
BB/WG	II/III	BB/WG (II/III)	As BB/WG (II/III)
BB/WGE	II/III	BB/WGE (II/III)	As BB/WGE (II/III)
CP/CP	III/III	CP/CP (III/III)	As CP/CP (III/III)
WG/WG	III/III	WG/WG (III/III)	As WG/WG (III/III)
WGE/WGE	III/III	WGE/WGE (III/III)	As WGE/WGE (III/III)
CP/C	III/IV	CP/C (III/IV)	As CP/C (III/IV)
CP/CC	III/IV	CP/CC (III/IV)	As CP/CC (III/IV)
C/C	IV/IV	C/C (IV/IV)	As C/C (IV/IV)
CC/CC	IV/IV	CC/CC (IV/IV)	As CC/CC (IV/IV)

Note:
– As (Aspen) preceding the grade designation indicates the use of aspen veneer for the inner plies;
– stacks of birch plywood may be labeled with a grade on one side (for example, C (IV)) upon agreement between the manufacturer and customer if the external plies on both sides conform to the same grade.

APPENDIX C
(mandatory)

Terms and Definitions of Processing Defects of External Birch Plywood Layers

See Table B.1 for terms and definitions of processing defects of external birch plywood layers

Table C.1

Name of processing defect	Description
Glued veneer particles	Veneer particles glued onto or pressed into the birch plywood surface
Rough peeling	Small, shallow surface recessions caused by a local removal of wood during peeling on the birch plywood surface
Pocket	a cavity in the wood or between annual rings filled with resin or gum

References

[1] DIN EN ISO 12460-3	Wood-based panels - Determination of formaldehyde release. Part 3. Gas analysis method
[2] EN 326-1-1994	Wood-based panels. Sampling, cutting, and quality control. Part 1. Sampling and cutting of test pieces and expression of test results
[3] EN 322:1993	Wood-based panels. Determination of moisture content
[4] EN 314-1:2004	Plywood. Bond quality. Part 1. Test methods
[5] EN 310:1993	Wood-based panels. Determination of the modulus of elasticity in bending and of bending strength
[6] EN 1099-1997	Plywood. Biological stability. Guidelines on plywood rating for use in various hazard classes
[7] ISO 12572:2001	Hygrothermal characteristics of building materials and products. Determination of water-vapor permeability properties
[8] HS 2.1.6.3492-17	Maximum allowable concentrations (MAC) of pollutants in the atmospheric air of urban and rural settlements
[9] HS 2.1.6.2309-07	Tentative safe exposure levels (TSEL) of pollutants in the atmospheric air of populated places. Health standards
[10] HS 2.1.6.2328-08	Addendum to GN 2.1.6.2309-07, Tentative safe exposure levels (TSEL) of pollutants in the atmospheric air of populated places. Health standards
[11]	Unified sanitary epidemiological and health standards for goods subject to sanitary and epidemiological control approved by the Customs Union Commission decision No. 299 as of May 28, 2010

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Keywords: corporate standard, general purpose birch plywood, dimensions, technical requirements, packaging, labeling, quality control methods, transportation, storage, warranty.

Developing company
OOO SVEZA-Forest

Head of Developer
General director
OOO SVEZA-Forest _____ A.S. Frishman

Development Lead
Technology development
and quality assurance area manager
OOO SVEZA-Forest _____ O.R. Kukut

Responsible
Quality department manager
NAO SVEZA Verkhnyaya Sinyachikha _____ E.N. Shubina