



CORPORATE STANDARD

SVEZA LASER BIRCH PLYWOOD Technical Specifications

STO 52654419-003-2018

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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*.

Standard Information

- 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 _____, ____ 20 ____
- 5 THE EXPERT CONCLUSION, dated 12.04.2018, 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,

This standard may only be used for work with the written consent of OOO SVEZA Forest.

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CORPORATE STANDARD

**SVEZA LASER BIRCH PLYWOOD
Technical Specifications****BIRCH PLYWOOD SVEZA LASER
Technical Requirements**

Effective since _____, 20__

1 SCOPE

This standard applies to SVEZA LASER birch plywood, used as the main material in the manufacture of punching tools and equipment for flat punching. It is also used for manufacture of other products with laser cutting (children's toys and construction kits, etc.).

SVEZA LASER plywood use as general-purpose plywood is also allowable.

SVEZA LASER plywood features improved properties, due to increased requirements to veneers for inner plies and stringent requirements regarding thickness dimensions and warpage.

2 REGULATORY REFERENCES

This standard hereby includes regulatory reference to the following standards:

GOST 12.4.011-89 Occupational safety standards system. Worker protective equipment. General requirements and classification.

GOST 427-75 Measuring metal rulers. Technical Specifications

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

GOST 3749-77 90° L-squares. Technical Specifications

GOST 6507-90 Micrometers. Technical Specifications

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

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 9622-87 Glued laminated timber. Methods for determination of tensile strength and modulus of elasticity

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

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

GOST 11358-89 Dial-type thickness gauges and dial-type pipe wall thickness gauges with scale divisions of 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 18321-73 Statistical quality control. Random sampling methods for custom production

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

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 rules for classification by appearance

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

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

3 CLASSIFICATION AND DIMENSIONS

3.1 SVEZA LASER plywood is classified according to the glue joint water resistance as INT / FK - water-resistant plywood, glued using carbamide-formaldehyde or carbamide-melamine-formaldehyde adhesives, for indoor use.

3.2 SVEZA LASER plywood could be of the two following types depending on the requirements applicable to the inner plies:

- SVEZA LASER Standard (LST);
- SVEZA LASER Premium (LPR).

3.3 SVEZA LASER Standard Plywood falls into the following grades according to appearance: B, BB, CP, (Latin letters) and I, II, III (Roman numerals).

SVEZA LASER Premium Plywood falls into the following grades according to appearance: B, BB (Latin letters) and I, II (Roman numerals).

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

3.4 As for the degree of surface machining, SVEZA LASER plywood is manufactured sanded on both sides, S2S / III2.

3.5 Depending on the surface finish type, SVEZA LASER plywood is manufactured: without finish, and with UV finish with varnish in order to protect it from dirt and moisture penetration during its transportation and storage. For the finish characteristics see Table 1.

Table 1

SVEZA LASER plywood type	SVEZA LASER Standard	SVEZA LASER Premium
Outer ply finish types	No finish	
	UV finish	
Finish characteristics	SVEZA LASER plywood, finished with UV curing with clear or translucent varnish of any shade	

3.6 Dimensions

3.6.1 The length and width of SVEZA LASER plywood sheets must be as shown in Table 2 below.

Table 2

in millimeters

Length (width) of plywood sheet	Maximum deviation
1500; 1525	± 3.0
1220; 1250	± 3.0
Notes:	
1. SVEZA LASER plywood is permitted to be produced in other sizes by agreement between the manufacturer and the customer, with ± 3.0 mm tolerances on length and width.	
2. The SVEZA LASER plywood sheet length is measured along the grain of the face plies.	

3.6.2 The thickness and number of plies of SVEZA Laser plywood must correspond to the data in Table 3 below.

Table 3

Nominal thickness of plywood (mm)	Number of plies, minimum	Thickness variation in a single sheet, maximum (mm)	Maximum deviation (mm)
3.0	3	0.2	± 0.3
4.0	3		
5.0	5		
6.0	5		

Table 3 (end)

Nominal thickness of plywood (mm)	Number of plies, minimum	Thickness variation in a single sheet, maximum (mm)	Maximum deviation (mm)
6.5	5	0.2	±0.3
8.0	7		
9.0	7		
10.0	7		
12.0	9		
15.0	11		±0.2
18.0	13		
20.4	15		
21.0	15		
24.0	17		
27.0	19		
30.0	21		

Note - SVEZA LASER plywood is permitted to be produced with other thicknesses, number of plies, and maximum deviations by agreement between the manufacturer and the customer

3.6.3 SVEZA LASER plywood sheets must be cut square.

Out-of-squareness must not exceed 1.5 mm per 1 m of the sheet edge length, using the quality control method as per Section 6.4.1.

Difference in the diagonal lengths must not exceed 1.5 mm per 1 m of the sheet edge length, when using the quality control method as per Section 6.4.2.

3.6.4 Out-of-straightness for the edges must not exceed 2 mm per 1 m of the sheet length.

3.7 The reference designation for SVEZA LASER plywood must include the following information:

- product designation with wood species specified;
- grade;
- plywood type;
- plywood grade,
- emission class;
- surface treatment type;
- surface finish type;
- dimensions;
- this Standard number.

Example of marking for birch plywood SVEZA LASER of INT / FK grade, SVEZA LASER Standard BB/BB type, emission class E1, both sides sanded, finished with clear or translucent varnish, 1,525 mm length, 1,525 mm width, and 10 mm thickness:

*Фанера SVEZA LASER березовая / Birch Plywood SVEZA LASER,
INT / FK, LST BB/BB, E1, S2S / III2, UV, 1525 x 1525 x 10
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4 TECHNICAL REQUIREMENTS

4.1 Characteristics

4.1.1 Birch veneer is used to manufacture external and inner plies of SVEZA LASER plywood.

Veneer thickness in the external and inner plies of SVEZA LASER plywood shall not exceed 2.0 mm.

Minimum thickness of external plies after sanding must be not less than half the initial thickness of the external ply.

For an even number of veneer plies, the two middle plies' grain direction must be parallel. Veneer plies arranged symmetrically within the SVEZA LASER plywood thickness must have the same thickness.

4.1.2 Wood flaws and processing defects that exceed the limits specified in Appendix A are not permitted in external plies of SVEZA LASER plywood. Terms and definitions for wood flaws and processing defects — as per GOST 30427 and Appendix B.

4.1.3 Knots, holes, and cracks are filled with veneer inserts of various shapes and sizes.

The veneer inserts must be attached firmly, match the surface, correspond to the SVEZA LASER plywood outer ply timber species, color, and grain direction.

4.1.4 In inner plies of SVEZA LASER Premium plywood, wood flaws and processing defects that exceed the limits specified in Appendix C are not permitted.

4.1.5 Cavities at the edges of SVEZA LASER Premium plywood, caused by inner ply defects such as crevices or knots, are permitted within the standard limits in Appendix C for the specified defects.

Cavities at the outer edges of SVEZA LASER Premium plywood that are caused by any other defect not mentioned in Appendix C are permitted to be not more than 5 mm in depth in a single ply.

4.1.6 In inner plies of SVEZA LASER Standard plywood, wood flaws and processing defects that do not affect plywood quality and dimensions, requirements to which are set forth in the present standard, are allowable.

4.1.7 SVEZA LASER plywood, depending on the quality of face veneers, is manufactured with grade compositions as follows:

— SVEZA LASER Premium plywood of B/B, B/BB and BB/BB grades;

— SVEZA LASER Standard plywood of B/B, B/BB, BB/BB, BB/CP grades.

4.1.8 For painting of UV finish of SVEZA LASER plywood edges, varnish or paint should be used to protect the plywood from moisture penetration. The color of edge protection must imitate the base coat color.

4.1.9 No requirements for the surface quality are applicable to SVEZA LASER plywood with UV finish.

4.2 Formaldehyde content in the plywood and formaldehyde emission from SVEZA LASER plywood into the room air must comply with the value specified in Table 4.

Table 4

Emission class	Formaldehyde content per 100 grams of absolutely dry weight of plywood (mg)	Formaldehyde release	
		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 during 3 days after manufacturing

4.3 Physical and mechanical performance of SVEZA LASER plywood is specified in Table 5.

Table 5

Parameter name	Thickness (mm)	Physical and mechanical parameter values
1 Moisture, max (%)	3 – 30	10
2 Shear strength for shearing through adhesive layer (MPa), min	3 – 30	1.0
3 Ultimate static bending strength: — along the grain of face plies (MPa), min — across the grain of face plies (MPa), min	9 – 30	45 30
4 Modulus of elasticity in static bending: — along the grain (MPa), min — across the grain (MPa), min	9 – 30	5000 3000
5 Tensile strength along the grain (MPa), min	3 – 8	30
6 Requirements for UV finish coating	3 – 30	no requirements are imposed

Notes:

1. Specified moisture limits should be adhered when shipping the SVEZA LASER plywood from the manufacturer's warehouse
2. Adhesive ply cleaving test must be performed in various plies of adhesive as per agreement between the manufacturer and customer
3. SVEZA LASER plywood samples preparation procedure for adhesive ply shear test: soaking in water (20 ± 3) °C for 24 hours
4. The parameter of Section 5 shall be selected by agreement between the manufacturer and the customer

4.4 SVEZA LASER plywood stock is accounted for in cubic meters. One sheet's volume is calculated without regard to rounding. The volume of assembled SVEZA LASER plywood stacks and batches is calculated with accuracy of 0.001 m³. The area of a single SVEZA LASER plywood sheet is calculated with accuracy of 0.01 m², and the area of the sheets in a batch with accuracy of 0.5 m².

4.5 Marking shall be applied using indelible black or green ink on the edge of each SVEZA LASER plywood sheet as a stamp or text without margins. Marking must include the following information:

- plywood grade (INT);
- plywood type - (LST or LPR);
- plywood grade,
- surface finish type (in availability of UV finish) - (UV);
- manufacturer (number or name);
- thickness;
- sorter number.

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

For the SVEZA LASER plywood with a thickness of 3-9 mm the stamp may be placed once for each (1-3) sheet.

Flat face should not be stamped.

Allowable by agreement between the manufacturer and the customer:

- to not mark SVEZA LASER plywood sheets;
- to not include additional information in the mandatory marking.

4.6 Packing of SVEZA LASER plywood

The SVEZA LASER plywood must be packed in 400, 600 or 900 mm high stacks separated by types, finish types, dimensions, and thickness.

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

The SVEZA LASER plywood in the stack must be placed with the grain running in the same direction.

4.7 Packing and labeling of ready stacks of SVEZA LASER plywood

SVEZA LASER packing of the plywood stacks shall ensure their integrity and preserve the stacks during transportation.

4.7.1 Packing material is polyethylene film and/or stretch film and/or plywood covers and wraps of at least 4 mm thickness.

4.7.2 The SVEZA LASER plywood stacks are wrapped using packing strip, with the protective angle pieces placed under the strip where it bends over the plywood stack edges.

4.7.3 By agreement with the customer, other types and means for packing the SVEZA LASER plywood may be used.

4.7.4 SVEZA LASER Premium plywood of 15 mm thickness shall be packed with a lower plywood envelope of at least 18 mm thickness.

4.7.5 SVEZA LASER Premium BB/BB plywood must be packed with a polyethylene film and/or stretch wrap.

4.7.6 SVEZA Laser Standard BB/BB plywood may be packed with a polyethylene film and/or stretch wrap only on customer's request.

4.7.7 Packed stacks of SVEZA LASER plywood shall be labeled using 298x209 mm (A4) self-adhesive 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 SVEZA LASER / ФАНЕРА SVEZA LASER березовая;
- dimensions, plywood thickness and thickness tolerance value (if required);
- plywood grade (INT / FK);
- plywood type - (LST or LPR in a “grade” field);
- plywood grade,
- type of machining used for the plywood face;
- plywood finish type;
- number of sheets in a stack;
- working shift code;
- plywood production date;
- emission class;
- order No. as per Special Terms and Conditions (by agreement with the customer);
- reference document governing plywood manufacture;
- 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 ACCEPTANCE REQUIREMENTS

5.1 SVEZA LASER plywood shall be accepted in lots.

Lot means a certain number of SVEZA LASER plywood sheets of the same type, grade, treatment and finish type and size.

For each lot, a single supporting document has to be issued, containing the following information:

- trademark;
- manufacturer name and address;
- plywood mark;
- lot size;
- name of the process standard to which the plywood should comply.

5.2 The quality and dimensions of SVEZA LASER plywood sheets shall be checked by means of selective sampling and testing. In sampling inspection, sheets of SVEZA LASER plywood are selected by means of “random” sampling as per GOST 18321 in the quantity stated in Table 6.

Table 6

in sheets

Lot size	Controlled parameter as per sections herein			
	3.6.1; 3.6.2; 3.6.3; 3.6.4		4.1.2; 4.1.3	
	Sample size	Acceptance number	Sample size	Acceptance number
Up to 500	8	1	13	1
501-1200	13	1	20	2
1201-3200	13	1	32	3
3201-10,000	20	2	32	3

The definition of sampling scope for section 5 of Table 5 are as by agreement between the manufacturer and the customer.

5.3 Moisture, shear strength through the adhesive ply, tensile strength for static bending across and along the grains of the outer plies, and the modulus of elasticity for static bending along and across the grains of the outer plies shall be checked for each SVEZA LASER plywood thickness and number of plies at least once per month for each customer order.

5.4 For the purpose of formaldehyde content and/or emission testing, one SVEZA LASER plywood sheet shall be selected from any sampling volume.

The formaldehyde content reading shall be checked at least once every 15 days.

The formaldehyde emission reading shall be checked at least once every 7 days.

5.5 The necessity of test performance, its frequency and scope of testing as per parameter of Section 5 of Table 5 shall be set by agreement between the manufacturer and the customer.

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

- the number of SVEZA LASER plywood sheets not complying with the standard requirements in terms of dimensions, out-of-squareness, out-of-straightness, wood defects, and processing defects, shall be less than or equal to the acceptance number established in Table 6;

- all SVEZA LASER plywood sheets are free from blisters, ply splitting, or bark patch;

- physical and mechanical parameters are compliant with the ranges set forth in Table 5;

- the formaldehyde content and/or emission are compliant with limits set forth in Table 4.

6 TEST METHODS

6.1 Sampling procedure — as per GOST 9620, GOST 27678, GOST 31255, GOST 30255, [1], [2].

6.2 SVEZA LASER 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 an error of 1 mm. The arithmetic mean value of the two measurements is considered the actual length (width) of the sheet.

6.3 SVEZA LASER plywood thickness is measured at least 25 mm from 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 the scale unit value not exceeding 0.1 mm;

— micrometer as per GOST 6507 with the scale unit value not exceeding 0.1 mm;

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

6.4 Out-of-squareness of a sheet of SVEZA LASER plywood

6.4.1 Out-of-squareness of SVEZA LASER plywood sheet shall be measured as per GOST 30427. The out-of-squareness value sheet shall be measured with an L-square as per GOST 3749. Out-of-squareness shall be determined by measuring the maximum deviation of the sheet edges from the L-square surface using a probe as per GOST 8925.

6.4.2 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 the scale division 1 mm.

6.5 Out-of-straightness of a SVEZA LASER plywood sheet's edges shall be determined 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.

6.6 Warping of the SVEZA LASER plywood sheet

6.6.1 For SVEZA LASER Standard BB/BB plywood, warping shall be determined as per GOST 30427.

6.6.2 For SVEZA LASER Premium plywood, warping shall be determined on a special vertical bench with dimensions not less than the plywood sheet length and width.

First, the shape of sheet warping W or P shall be assessed visually by placing it on the edge to the vertical bench.

6.6.2.1 SVEZA LASER Premium plywood with the W warping shape must be tightly pressed against and fixed to the vertical bench at points 1, 2 and 3, and the measurement shall be carried out at point 4 with a metal ruler as per GOST 427 or metal measuring tape as per GOST 7502, as shown in Figure 1.

6.6.2.2 SVEZA LASER Premium plywood with the P warping shape must be fixed near the floor base and vertical bench at points 1 and 2, and the measurement shall be carried out at point 3 with a metal ruler as per GOST 427 or metal measuring tape as per GOST 7502, as shown in Figure 1.

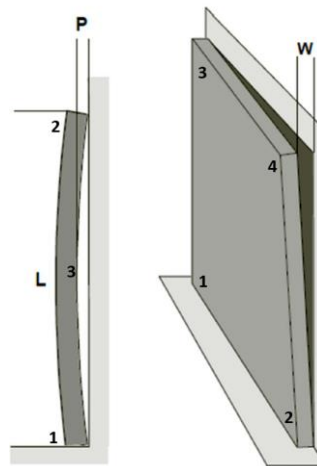


Fig. 1

6.6.3 Table 7 indicates warping tolerances depending on shape.

Table 7

Warping shape	Plywood nominal thickness (mm)	Distance between the check plane and sheet surface, maximum (mm)		
		Per 1 meter of edge length	For L – 1500 L – 1525	For L – 1220 L – 1250
P / W	≥ 6.5	not considered		
P	6.5 to 15	8	12	10
P	>15	5	7.5	6
W	> 6.5	10	15	12

6.7 Moisture — GOST 9621, [3].

6.8 Tensile strength for cleaving through adhesive layer — as per GOST 9624, [4].

6.9 Modulus of elasticity in static bending and tensile strength — per GOST 9625, [5].

6.10 Tensile strength along the grain - as per GOST 9622.

6.11 Formaldehyde content as per GOST 27678; formaldehyde emission into the environment as per GOST 30255, GOST 32155 and [1].

6.12 Surface roughness — as per GOST 15612.

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

7 TRANSPORTATION AND STORAGE

SVEZA LASER plywood shall be transported in enclosed transport vehicles in accordance with the haulage rules applicable to the respective means of transport.

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

7.2 Storage of SVEZA LASER plywood.

SVEZA LASER plywood must be stored indoor in stacks placed horizontally on pallets or on wooden shims, at a temperature between -40°C and $+50^{\circ}\text{C}$ and relative humidity up to 80%.

8 MANUFACTURER'S WARRANTY

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

The INT/ FK grade SVEZA LASER plywood guaranteed shelf life is 3 years following the day of receipt by customer.

If the SVEZA LASER plywood is to be used for further processing, it is recommended to contact the manufacturer for more details about the properties and specifications of the plywood.

9 SAFETY AND ENVIRONMENTAL REQUIREMENTS

9.1 The content of hazardous chemicals emitted into residential or public building air during use of SVEZA LASER plywood products must not exceed the requirements under items [6], [7], and [8].

9.2 SVEZA LASER plywood must be produced using materials and components approved by the national sanitary and epidemiological inspection authorities.

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

9.4 Personnel engaged in SVEZA LASER plywood manufacturing must be provided with personal protective equipment according to the applicable regulations under GOST 12.4.011.

9.5 Specific activity of Cesium 137 in SVEZA LASER plywood must not exceed health standards set forth in [9].

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

9.7 SVEZA LASER plywood usually has a long service life, and there are a number of ways to recycle it. SVEZA LASER plywood must be recycled taking into account the ordinances regarding recycling in the effective laws of various countries.

APPENDIX A
(mandatory)

**Limit values for wood flaws and processing defects — as per GOST 30427 for outer plies
of SVEZA LASER plywood**

Limit values for wood flaws and processing defects — as per GOST 30427 for outer plies of SVEZA LASER plywood are listed in Table A.1

Table A.1

WOOD FLAWS AND PROCESSING DEFECTS	LPR and LST type B grade	LPR type BB grade	LST type BB grade	LST type CP grade
1. Pin knots	allowable			
2. Sound knots, intergrown, light and dark	light ones are allowable up to 15 mm in diameter with cracks up to 0.5 mm width, no more than 5 per m ²	light ones up to 15 mm in diameter with cracks up to 1 mm width, 2 m ² maximum — allowed	light ones up to 25 mm in diameter with cracks up to 1 mm width, 10 m ² maximum — allowed	allowed with the crack up to 1 mm width
3. Partially intergrown knots	allowable with dimensions and quantity as per Section 4 of this Appendix	allowed including intergrown knots up to 15 mm in diameter, 2 m ³ maximum	intergrown knots up to 15 mm in diameter, 10 m ² maximum — allowed	
4. Black knots, loose knots, knot holes (no bark inclusions)	allowed including intergrown knots up to 6 mm in diameter, 3 m ³ maximum	allowed including intergrown knots up to 6 mm in diameter, 2 m ³ maximum	allowed including intergrown knots up to 6 mm in diameter, 3 m ³ maximum	allowable: any number, with diameters up to 6 mm
5. Closed cracks	permitted: 200 mm up to 5 per meter of sheet width	allowable: up to 5 per meter of sheet width, up to 300 mm long		edge and middle cracks are allowable

Table A.1 — continued

WOOD FLAWS AND PROCESSING DEFECTS	LPR and LST type B grade	LPR type BB grade	LST type BB grade	LST type CP grade
6. Open cracks	not allowable	allowable: up to 3 per meter of sheet width, up to 250 mm long and up to 2 mm wide		allowable: up to 600 mm long and up to 2 mm wide, no more than 2 per meter of sheet width + allowable: up to 600 mm long and up to 5 mm wide, provided these are filled up using sealing agents
7. Open joints on spliced veneer	Edge-jointed veneer is not allowed to be used			
8. Timber structure flaws (diagonal grain, swirly grain, burls, bud traces)	allowable			
9. 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 — allowable, dark inbark allowable within dimensions of jointed knots		
10. Timber structure flaws (surface inbark)	allowable length within the total number under the black knot standards			
11. Sound discoloration (false heartwood)	not allowable	up to 25% of surface — allowable		up to 75% of surface — allowable
12. Sound discoloration (stains, streaks, streak traces)	allowable bright, no more than 3 per m ² of sheet, up to 175 mm long and up to 4 mm wide	allowable: up to 250 mm long and up to 10 mm wide in total not more than 10 per m ²		allowable

Table A.1 — continued

WOOD FLAWS AND PROCESSING DEFECTS	LPR and LST type B grade	LPR type BB grade	LST type BB grade	LST type CP grade
13. Sound discoloration (grouped streaks)	allowable are light ones, up to 30x30 mm, up to 1 per m ²	allowable: up to 60x40 mm, not more than 1/m ²		allowable
14. Chemical colorations, sap stains (blue and colored sap stains), discoloration after storage of wood without compromising the wood integrity	allowable up to 30% of the sheet surface area	up to 50% of the sheet surface area (false heartwood included) is allowable		allowable: up to 75% of the sheet surface area (false heartwood included)
15. Biological damage (worm-holes)	allowable within the total number under the black knot requirements			
16. Discoloration with partial wood damage	not allowable			
17. Patching of knots and holes with wood inserts	not allowable	inserts of various shape and size are allowable up to 8 per m ²		allowable with 1 mm gap from one side or 0.5 mm gap from both sides
18. Double insert	not allowable	allowable: not more than 1/m ²		allowable
19. Patching open cracks with sealing agents or veneer patches	not allowable	open cracks wider than 2 mm must be patched with glued veneer inserts or sealing agent		open cracks wider than 5 mm must be patched with glued veneer inserts
20. Faceplate bulges (imprinted)	not allowable	allowable: up to 200 mm long and up to 10 mm wide in total not more than 3 per sheet		permitted: up to 600 mm long and up to 10 mm wide in total not more than 5 per sheet
21. Overlaps	not allowable	allowable: up to 1 per meter of sheet width, up to 100 mm long and up to 2 mm wide		allowable: up to 2 per meter of sheet width, up to 300 mm long and up to 2 mm wide

Table A.1 — continued

WOOD FLAWS AND PROCESSING DEFECTS	LPR and LST type B grade	LPR type BB grade	LST type BB grade	LST type CP grade
22. Stains from manufacturing (beam traces, strips)	not allowable	up to 10% of surface — allowable		allowable
23. Glue penetration	not allowable	up to 5% of surface — allowable		allowable: up to 5% of sheet surface area (for sheets 3–21 mm thick) allowable: up to 10% of sheet surface area (for sheets min. 24 mm thick)
24. Mechanical damage (cuts, holes)	allowable within the total number under the black knot requirements			
25. Scratches, ribs, blows, ridges	not allowable			allowable up to 120 mm long and up to 10 mm wide, and 0.5 mm in depth
26. Blister, delamination (also when bended), bark patch	not allowable			
27. Unsanded stains (nonuniform sanding)	not allowable			up to 5% of surface — allowable
28. Oversanding of veneers	not allowable			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)
29. Metal inclusions	not allowable			brackets of non-ferrous metals are allowable

Table A.1 (end)

WOOD FLAWS AND PROCESSING DEFECTS	LPR and LST type B grade	LPR type BB grade	LST type BB grade	LST type CP grade
30. Rough peeling	not allowable	up to 5% of surface — allowable		up to 15% of surface — allowable
31. Waviness, rough saw cut, ripple	not allowable			allowable
32. Surface roughness for unfaced plywood	roughness parameter R_m as per GOST 7016 (μm), 100 maximum			
33. Pockets (no bark inclusions)	not allowable	allowable: in size of group streaks not more than 60x40 mm, not more than $1/\text{m}^2$		allowable
34. Veneer lengthwise gluing	not allowable			
35. Glued veneer inserts	not allowable			allowable: up to 150 mm long and up to 30 mm wide in total not more than 1 per sheet
36. Deviation from allowable dimensions	dimensions as per Sections 3.6.1, 3.6.2, 3.6.3, 3.6.4			
37. Warping	For LPR type - as per 6.6.2 For LST type - not considered for plywood up to 6.5 mm thick; no more than 1% from larger side is allowable for plywood sheet thicker than 6.5 mm			

Note: Any defects not specified in Appendix A are not allowed.

**APPENDIX B
(mandatory)**

**Terms and definitions of processing defects of the outer plies of SVEZA
LAZER plywood**

Terms and definitions for processing defects of external plies of the SVEZA LAZER plywood are specified in Table B.1

Table B.1

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

**APPENDIX C
(mandatory)**

**Wood flaws and processing defects limits for internal plies
of SVEZA LASER Premium plywood**

Wood flaws and processing defects limits for inner plies of the SVEZA LASER Premium plywood are listed in Table C.1

Table C.1

WOOD FLAWS AND PROCESSING DEFECTS	LIMIT VALUES FOR PLYWOOD INNER PLIES
1. Pin knots	allowable
2. Sound knots, intergrown, light and dark	allowable: up to 15 mm diameter, not exceeding 5 per sheet
3. Partially intergrown knots	allowable: up to 15 mm diameter, not exceeding 5 per sheet
4. Black knots, loose knots, knot holes (no bark inclusions), tobacco color	allowable: up to 15 mm diameter, not exceeding 5 per sheet
5. Closed cracks	allowable
6. Open cracks	allowable up to 2 mm wide, without limitations on length and quantity
7. Edge-jointed veneer usage Gap in the edge-jointed veneer joints	Edge-jointed veneer usage is not allowed
8. Use of spliced veneer	allowable with use of laser-compatible adhesive
9. Bark	not allowable
10. Chemical colorations, sap stains (blue and colored sap stains), discoloration after storage of wood without compromising of the wood integrity	allowable
11. Discoloration with partial wood damage	allowable up to 5% of sheet surface

End of Table C.1

WOOD FLAWS AND PROCESSING DEFECTS	LIMIT VALUES FOR PLYWOOD INNER PLIES
12. Biological damage (wormholes), mechanical damage (including hook cuts)	not considered with up to 3 mm size; more than 3 mm size are allowable within the total number under the black knot standards
13. Patching of crevices and holes left by knots	allowable by veneer patches of any form and size without quantity limitation
14. Soot, soot dust, and other products of burning on the veneer surface	not allowable
15. Stable discoloration (false heartwood, stains, streaks, batch streaks)	allowable
16. Rough peeling	allowable
17. Open ingrowth (no bark inclusions)	allowable length within the total number under the black knot standards

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. Testing sample selection and cutting, expressing 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] HS 2.1.6.3492-17 Maximum allowable concentrations (MAC) of pollutants in the atmospheric air of urban and rural settlements
- [7] HS 2.1.6.2309-07 Tentative safe exposure levels (TSEL) of pollutants in the atmospheric air of populated places. Health standards
- [8] 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
- [9] 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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