LIMITED LIABILITY COMPANY SVEZA-Les

COMPANY STANDARD*

SVEZA LASER BIRCH PLYWOOD
Technical Specifications

STO 52654419-003-2024

Saint Petersburg
2024

* 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

Foreword

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

Development and presentation rules are specified by GOST R 1.0-2012 «*Standardization in the Russian Federation. Basic provisions»* and GOST R 1.4-2004 «*Standardization in the Russian Federation. Standards of organizations. General»*, taking into account GOST R 1.5-2012 « *Standardization in Russian Federation. National standards. Rules of structure, drafting, presentation and indication».*

TABLE OF CONTENTS

COMPANY STANDARD

SVEZA LASER BIRCH PLYWOOD
Technical Specifications

RUS: Фанера SVEZA LASER березовая
Технические условия

Date of introduction «21» May 2024

1 SCOPE OF APPLICATION

This company standard (hereinafter referred to as the Standard) applies to SVEZA LASER birch plywood (hereinafter referred to as SVEZA LASER) that is used as a base material to manufacture die forms and tools, for flat die-cutting. It is also used to manufacture other products by using laser cutting (children toys, DIY kits, etc.).

SVEZA LASER plywood may be used as plywood for general use.

SVEZA LASER plywood has improved properties due to the higher requirements to the veneer for inner plies and strict dimensional tolerances for thickness and warping.

2 NORMATIVE REFERENCES

This Standard includes normative references to the following standards:

GOST 427-75 Measuring metal rules. Basic parameters and dimensions. Specifications

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

GOST 3749-77 Checking 90° squares. Specifications

GOST 6507-90 Micrometers. Specifications

GOST 7016-2013 Products of wood and wood materials. Roughness parameters

GOST 7502-98 Measuring metal tapes. Specifications

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

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

GOST 9621-72 Laminated glued wood. Methods for determination of physical properties

GOST 9622-2016 Glued laminated wood. Methods for determination of ultimate strength and modulus of elasticity in tension

GOST 9624-2009 Laminated glued wood. Method for determination of shear strength

GOST 9625-2013 Laminated glued wood. Method for determination of ultimate strength and modulus of elasticity in static bending

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

GOST 14614-79 Plywood plus. Specifications

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

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

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

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

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

GOST R 50779.12-2021 Statistical methods. Statistical quality control. Item random sampling methods

GOST R 59123-2020 Occupational safety standards system. Personal protective equipment. General requirements and classification

N o t e: While using this standard, it is advisable to check the validity of the standards referenced against the National Standards Reference Index.

3 CLASSIFICATION AND DIMENSIONS

3.1 In terms of water resistance of glue bond, SVEZA LASER plywood is water-resistant plywood of INT/ ФК type glued using urea-formaldehyde adhesives and intended for indoor use.

Note: SVEZA LASER plywood of INT / ФК type belongs to INT formaldehyde emission group.

3.2 Depending on the requirements to inner layers, two types of SVEZA LASER plywood is manufactured:

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

3.3 Based on its surface appearance, SVEZA LASER Standard plywood is divided into grades: B, BB, and CP (when designated by Latin letters) or I, II, and III (when designated by Roman numerals).

Based on its surface appearance, SVEZA LASER Premium plywood is divided into grades: B, and BB (when designated by Latin letters) or I, and II (when designated by Roman numerals).

A grade designation includes both Latin letters and Roman numerals. LST / LPR is added before the grade designation.

3.4 In terms of surface treatment SVEZA LASER plywood is S2S, i.e. sanded on both sides.

Note: Sanding belts with a grain size of P80 - P100 microns are used for sanding plywood.

3.5 Depending on the surface finishing, SVEZA LASER plywood is manufactured without or with finishing (facing) with transparent melamine films to protect panels against contamination and moisture penetration during transportation and storage. The characteristics of the finish is shown in Table 1.

T a b l e 1

Type of SVEZA LASER plywood	SVEZA LASER Standard	SVEZA LASER Premium
Types of surface finishing	Without finishing	
	Finished (faced) with transparent melamine films	
Finish characteristics	SVEZA LASER plywood faced with transparent melamine films "SVEZA LASER Melamine”	

3.6 Dimensions

3.6.1 The length and width of SVEZA LASER plywood panels should correspond to the values specified in Table 2.

T a b l e 2

in millimeters

Plywood panel length (width)	Tolerances on nominal size
1,500; 1,525	±3.0
1,220; 1,250	±3.0
2,440; 2,500	±4.0
Notes: 1. It is allowed to manufacture SVEZA LASER plywood with other dimensions by agreement between the manufacturer and the client. 2. The length of SVEZA LASER plywood panel is determined in grain direction of the outer layers	

3.6.2 The SVEZA LASER plywood thickness and number of plies should correspond to the values specified in Table 3.

T a b l e 3

Nominal plywood thickness, mm	Number of plies, not less than	Thickness tolerance within one panel, not more than, mm	Tolerances on nominal thickness, mm
3.0	3	0.2	± 0.3
4.0	3		
5.0	5		
6.0	5		
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 may be manufactured of other thickness, number of plies and tolerances by agreement between the manufacturer and the customer.			

3.6.3 SVEZA LASER plywood panels should be cut at a right angle.

Tolerance for squareness must not exceed 1.5 mm per 1 m of the panel edge length when controlled according to 6.4.1.

Difference in the diagonal lengths must not exceed 1.5 mm per 1 m of the panel edge length when controlled according to 6.4.2.

3.6.4 Tolerance for straightness of edges must not exceed 2 mm per 1 m of panel length.

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

- product name with indication of wood species;
- type of plywood;
- SVEZA LASER brand name;
- SVEZA LASER plywood grade;
- emission class;
- type of surface treatment;
- type of surface finish;
- dimensions;
- reference to this standard.

Example of a reference designation of SVEZA LASER plywood, of INT/FK type, SVEZA LASER Premium type, B/BB grade, E1 emission class, sanded on both sides; 1,525 mm in length, 1,525 mm in width, 9 mm thick:

Фанера SVEZA LASER березовая / Birch Plywood SVEZA LASER,
INT / ФК, LPR B/BB (I/II), E1, S2S / Ш2, 1525 x 1525 x 9
СТО 52654419-003-2024

Example of a reference designation of SVEZA LASER plywood, of INT/FK type, SVEZA LASER Melamine Standard, B/BB grade, E1 emission class, faced with transparent MEL TRANS melamine films; 2,440 mm in length, 1,220 mm in width, 12 mm thick:

Фанера SVEZA LASER Melamine березовая / Birch Plywood SVEZA LASER Melamine,
INT / ФК, LST BB/BB (II/II), E1, MEL TRANS/MEL TRANS, 2440 x 1220 x 12
СТО 52654419-003-2024

4 TECHNICAL REQUIREMENTS

4.1 Characteristics

4.1.1 Outer and inner layers of SVEZA LASER plywood are made of birch veneer.

The thickness of the veneer used for outer and inner plies of SVEZA LASER plywood should not exceed 2.0 mm.

The minimum thickness of outer plies after sanding should not be less than a half of the initial thickness

If the number of layers is even, the grain direction of the two middle plies should be parallel. The veneer plies laid up symmetrically throughout a SVEZA LASER plywood panel should have the same thickness.

4.1.2 No wood-inherent and manufacturing defects exceeding the limits specified in Appendix A are permitted in outer plies of SVEZA LASER plywood. The terms and definitions of wood and manufacturing defects are as specified in GOST 30427 and Appendix B.

4.1.3 The surface appearance of SVEZA LASER Melamine plywood must meet the requirements specified in Appendix D. The terms and definitions of wood and manufacturing defects are as specified in Appendix E.

4.1.4 Veneer inserts of different shapes and sizes may be used to repair knots, holes and checks.

The veneer inserts should fit in tightly, match the surface by wood species, colour and grain direction of the outer layer of SVEZA LASER plywood.

4.1.5 No wood and manufacturing defects exceeding the limits specified in Appendix C are permitted in inner plies of SVEZA LASER Premium plywood.

4.1.6 Voids on edges of SVEZA LASER Premium plywood resulting from the inner plies defects (checks, knots) are permitted within the limits for the defects specified in Appendix C.

Voids on outer edges of SVEZA LASER Premium plywood resulting from the defects not specified in Appendix C are permitted if their depth in one ply is not more than 5 mm

4.1.7 Wood and manufacturing defects in the inner layers of SVEZA LASER plywood are permitted if they do not affect its quality and dimensions set up in this Standard.

4.1.8 Depending on the outer layers quality, SVEZA LASER plywood is manufactured with the following combinations of grades:

- SVEZA LASER Premium plywood: B/B, B/BB and BB/BB grades;
- SVEZA LASER Standard plywood: B/B, B/BB, BB/BB, BB/CP grades.

4.1.9 The edges of plywood SVEZA LASER Melamine are coated with a varnish or paint to protect against moisture penetration. The color of the edge protection should imitate the color of the main coating.

4.2 The formaldehyde content and the formaldehyde release from SVEZA LASER plywood into the room air should comply with the values given in Table 4.

T a b l e 4

Emission class	Formaldehyde content Perforator method, mg/100 g of oven-dry weight of plywood	Formaldehyde emission	
		Chamber method, mg/m^3 of air	Gas analysis method, mg/m^2*h
E 0.5	Up to 4.0 inclusive	Up to 0.01 inclusive	Up to or equal to 1.5
E1	Over 4.0 and up to 8.0 inclusive	Over 0.01 and up to 0.124 inclusive	Over 1.5 and up to or equal to 3.5 or less than 5 within 3 days after production

4.3 The physical and mechanical properties of SVEZA LASER plywood are given in Table 5.

T a b l e 5

Item	Thickness, mm	Values of physical and mechanical properties
1 Moisture content, not more than, %	3 – 30	10
2 Ultimate shear strength, MPa, not less than	3 – 30	1.0

3 Bending strength: - in grain direction of outer layers, MPa, not less than - across the grain direction of outer layers, MPa, not less than	9 – 30	 45 30
4 Modulus of elasticity at bending (Bending stiffness): - in grain direction of outer layers, MPa, not less than - across the grain direction of outer layers, MPa, not less than	9 – 30	 5,000 3,000
5 Ultimate tensile strength in grain direction, MPa, not less than	3 – 8	 30
6 Adhesion strength of coating to the outer veneer of SVEZA LASER Melamine plywood	3 – 30	Coating should not peel off at the intersection of two notch lines
N o t e s: 1. SVEZA LASER plywood shipped from the manufacturer's warehouse should have the moisture content values specified above. 2. The bonding quality test is performed in different glue lines as agreed upon between the manufacturer and the customer. 3. Before the bonding quality test of SVEZA LASER plywood, the test pieces are pre-treated by 24-hour soaking in cold water at (20 ± 3) °C. 4. The characteristic in Item 5 is agreed upon between the manufacturer and the customer.		

4.4 SVEZA LASER plywood volume is counted in cubic metres. The volume of one panel is calculated without rounding. The volume of a SVEZA LASER plywood bundle or a batch is calculated with an accuracy of 0.001 m^3. The area of a SVEZA LASER plywood panel is calculated with an accuracy of 0.01 m^2, the area of panels in a batch – with an accuracy of 0.5 m^2.

4.5 Marking is applied indelibly in black or green paint to the edge of each panel of SVEZA LASER plywood in the form of a stamp or in the form of text, not limited by the margins.

4.5.2 The marking applied automatically shall contain the following information:

- manufacturer (number or name);
- SVEZA LASER plywood type;
- surface finish type (melamine if applicable)
- thickness.
- SVEZA LASER plywood grade;
- shift and/or sorter number;
- date and/or time of manufacture.

4.5.3 The marking applied manually should include the following information:

- manufacturer (number of BU);
- shift.

4.5.4 The manual marking (stamp) is applied at the corner of the longitudinal or transverse edge.

4.5.5 It is allowed to apply one stamp on (1-3) panels on SVEZA LASER plywood with thickness of 3 to 9 mm.

4.5.6 By agreement between the manufacturer and the client, it is allowed:

- not to mark SVEZA LASER plywood panels;
- to add additional information to the mandatory marking.

4.5.7 No ink/traces of marking are allowed on the panel's surface (face veneers).

4.6 Stacking of SVEZA LASER plywood

SVEZA LASER plywood panels should be stacked in bundles of 400, 600 or 900 mm high sorted by type, finish type, size and thickness.

As agreed upon between the manufacturer and the customer, SVEZA LASER plywood panels may be stacked in bundles of other heights.

SVEZA LASER plywood panels should be stacked in a bundle so that their grain directions coincide. The panels in a pack should be stacked so that the higher grades face upward.

4.7 Packaging and marking of SVEZA LASER plywood bundles ready for shipment.

Bundles of SVEZA LASER plywood should have proper packaging to ensure its integrity and prevent damage during transportation.

4.7.1 Polyethylene film and/or stretch film and/or side protective plywood panels not less than 4 mm thick are used as packaging material.

4.7.2 SVEZA LASER plywood panel bundles are tied with a packing strap including corner protectors placed under the strap on the edges.

4.7.3 Other types and methods of packaging for SVEZA LASER plywood may be used as agreed upon between the manufacturer and the customer.

4.7.4 The package for bundles of SVEZA LASER Premium plywood panels up to 15 mm thick should include a protective plywood base panel at least 18 mm thick.

4.7.5 SVEZA LASER Premium BB/BB plywood should be wrapped in a polyethylene film and/or stretch film.

4.7.6 SVEZA LASER Standard BB/BB plywood may be wrapped in a polyethylene film and/or stretch film at the customer's request only.

4.7.7 The marking of the packed bundles of SVEZA LASER plywood is done by labels. The text on the labels is written in Russian and/or English language and the labels are placed on two sides of the packaging being parallel or perpendicular to one another. The text on both labels includes the same information:

- trademark;
- product name – SVEZA LASER birch plywood;
- dimensions and thickness of SVEZA LASER plywood and thickness tolerances (if required);
- SVEZA LASER plywood type (INT / ФК);
- kind of SVEZA LASER plywood (LST or LPR in the "Grade" field);
- grade of SVEZA LASER plywood;
- surface machining of SVEZA LASER plywood;
- type of finish of SVEZA LASER plywood;

- number of panels per pack;
- shift;
- SVEZA LASER plywood production date;
- emission class;
- number of the order under Special Terms and Conditions (to be applied as agreed upon between the manufacturer and the customer);
- the regulatory technical document based on which SVEZA LASER plywood is produced;
- manufacturer name and address;
- certification marks and technical control sign;
- handling pictograms: “Keep dry” and “Use no hooks”;
- barcode if a data collection terminal (scanner) is available.

For convenience of warehouse operations, additional marking may be applied in the form of a label or by using a stencil.

5 ACCEPTANCE RULES

5.1 SVEZA LASER plywood is accepted in batches.

A batch is a certain number of SVEZA LASER plywood panels of the same type, grade, machining type, finish type and size.

One document should be issued for a batch including the following information:

- trademark;
- manufacturer name and address;
- designation of SVEZA LASER plywood;
- batch size;
- the regulatory technical document based on which SVEZA LASER plywood is produced.

5.2 SVEZA LASER plywood panels’ quality and dimensions are checked by sample inspection. The sample inspection includes random sampling of SVEZA LASER plywood panels according to GOST R 50779.12 in the amount specified in Table 6.

T a b l e 6

In panels

Batch size	Controlled value under paragraphs			
	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 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

The sample size for Item 5 of Table 5 is agreed upon between the manufacturer and the customer.

5.1 Moisture content, ultimate shear strength, bending strength in grain direction and across the grain direction of outer layers, and modulus of elasticity at bending in grain direction and across the grain direction of outer layers should be checked for each thickness and number of plies of SVEZA LASER plywood at least once for each customer's order.

5.2 To control the formaldehyde release one panel of SVEZA LASER plywood is selected from a sample of any size.

The formaldehyde release for INT/ФК formaldehyde emission group is checked at least once every 7 days.

5.3 The need for testing, its frequency and scope of control for Item 5 of Table 5 are agreed upon between the manufacturer and the customer.

5.4 A batch is considered compliant with the requirements of this Standard and accepted if in the samples:

- the number of SVEZA LASER plywood panels non-compliant with the requirements in terms of dimensions, squareness, edge straightness, wood and manufacturing defects is less or equal to the acceptance number set up in Table 6;
- no panels of SVEZA LASER plywood have any blisters, delamination or bark pockets;
- the performance values correspond to the values set up in Table 5;
- the formaldehyde release complies with the limit values set up in Table 4.

6 CONTROL METHODS

6.1 Sampling is done according to GOST 9620, GOST 27678, GOST 31255, GOST 30255, [1] - [2].

6.2 The SVEZA LASER plywood length and width are measured to a tolerance of 1 mm at two points parallel to the edges at least 100 mm from the edges using a metal measuring tape in accordance with GOST 7502. The actual panel length (width) is the arithmetic mean of two measurement results.

6.3 The thickness of SVEZA LASER plywood is measured at a distance of at least 25 mm from the edges in the middle of each side of a panel.

The actual panel thickness is the arithmetic mean of four measurement results.

The following instruments are used to measure thickness:

- a thickness gauge according to GOST 11358 with graduation of no more than 0.1 mm;
- a micrometer according to GOST 6507 with graduation of no more than 0.1 mm;

The thickness variation within one panel of SVEZA LASER plywood is defined as the difference between the maximum and the minimum of the four measurement results.

6.4 Squareness of SVEZA LASER plywood panel

6.4.1 The squareness of SVEZA LASER plywood panel is measured in accordance with GOST 30427. It is measured by using a try square in accordance with

GOST 3749 and determined by measuring the deviation of each panel edge from the try square surface by using a gauge in accordance with GOST 8925.

6.4.2 It is permitted to determine the deviation from squareness by calculating the difference of the lengths of the panel diagonals measured by using a metal measuring tape graduated in 1 mm in accordance with GOST 7502.

6.5 The deviation from straightness of SVEZA LASER plywood panel edges is determined by measuring the maximum gap between the panel edge and the edge of the metal ruler using a gauge in accordance with GOST 8925 with an accuracy of 0.2 mm.

6.6 Warp of SVEZA LASER plywood panels

6.6.1 The warp of SVEZA LASER plywood is determined on a special vertical stand with the dimensions not smaller than the length and width of the plywood panel.

First, W or P warp shape of the panel is visually evaluated with the panel being placed on its edge against the vertical stand.

6.6.1.1 SVEZA LASER plywood with the warpness form W should be placed on a vertical stand: 5x5 – with the transverse edge to the floor, 8x4x8 – with the long edge to the floor. Fix the panel at points 1, 2 and 3.

The measurement should be made at point 4 using a metal ruler according to GOST-427 or tape measure according to GOST-7502, as shown in Figure 1.

6.6.1.2 SVEZA LASER plywood with the warpness form P should be placed on a vertical stand: 5x5 – with transverse edge to the floor, 8x4x8 – with its long edge to the floor. Fix the panel at points 1 and 2.

The measurement should be made at point 3 using a metal ruler according to GOST 427 or tape measure according to GOST 7502, as shown in Figure 1.

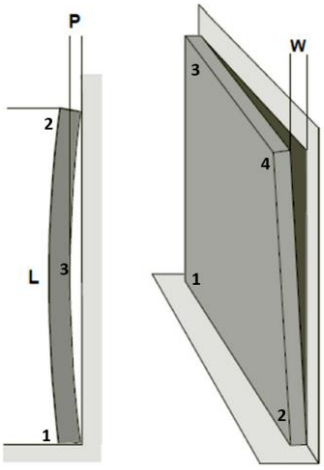

Fig.1

6.6.2 The warp tolerances by shape are specified in Table 7.

T a b l e 7

Warping form	Nominal thickness of plywood, mm	Distance from the reference plane to the panel surface, max., mm			
		per 1 m of	for length	for length	for length

		edge length	1220 mm; 1250 mm	1500 mm; 1525 mm	2440 mm; 2500 mm
P / W	≤ 6.5	not taken into account			
P	6.5 to 15	8	10	12	20
P	> 15	5	6	7.5	12.5
W	> 6.5	10	12	15	25

6.7 The moisture content is according to GOST 9621, [3].

6.8 The ultimate shear strength is controlled according to GOST 9624, [4].

6.9 The ultimate bending strength and modulus of elasticity at bending are determined according to GOST 9625, [5].

6.10 The ultimate tensile strength in grain direction is determined according to GOST 9622.

6.11 The formaldehyde content is controlled according to GOST 27678 (the said method is used as the reference method), formaldehyde release in the environment is checked according to GOST 30255, GOST 32155, and [1].

6.12 The surface roughness is checked according to GOST 15612.

6.13 Measurement of wood and manufacturing defects is done according to GOST 30427 and GOST 2140.

6.14 The strength of the adhesion of coating to the plywood — in accordance with GOST 14614.

7 TRANSPORTATION AND STORAGE

7.1 SVEZA LASER plywood should be transported in fully enclosed vehicles in accordance with the rules for carriage of goods by the respective mode of transport.

The transportation conditions should prevent any increase of the SVEZA LASER plywood moisture content that may result in changes of geometric, physical, qualitative characteristics of the plywood and emission class.

7.2 Storage of SVEZA LASER plywood

SVEZA LASER plywood in an appropriate packaging should be stacked flat on a level surface on pallets or wooden battens indoors at a temperature of minus 40 °C to plus 50 °C and relative humidity of not more than 80%.

8 MANUFACTURER'S WARRANTY

The manufacturer guarantees that SVEZA LASER plywood quality complies with requirements of this Standard provided that the transportation and storage conditions are met.

The guaranteed shelf life of SVEZA LASER plywood of INT / ФК type is 3 years from the day of receipt by the customer.

When SVEZA LASER plywood is intended for further processing or treatment, it is recommended that the manufacturer should be contacted to specify the plywood properties and specifications.

9 SAFETY REQUIREMENTS AND ENVIRONMENTAL PROTECTION

9.1 The content of hazardous chemicals released in the air of residential premises and public buildings when items made of SVEZA LASER plywood are used should not exceed the values specified by the requirements of [6], [7], [8].

9.2 SVEZA LASER plywood should be produced with the use of the materials and components permitted for use by the national sanitary and epidemiological supervision authorities.

9.3 The personnel engaged in SVEZA LASER plywood production should be at least 18 years old and have no medical contraindications. Medical examinations are conducted in accordance with the effective orders of the Ministry of Health of the Russian Federation.

9.4 The personnel engaged in SVEZA LASER plywood production should be provided with personal protective equipment according to the applicable regulations in compliance with GOST 12.4.011.

9.5 Specific activity of Cesium 137 in SVEZA LASER plywood should not exceed the hygiene standards specified by the requirements of [9].

9.6 The standard SVEZA LASER plywood does not contain any raw materials, materials and components classified as hazardous waste.

9.7 SVEZA LASER plywood usually has a long service life and there are several disposal methods used. The disposal method for SVEZA LASER plywood should be selected taking into account the disposal requirements established by the legislation of different countries.

APPENDIX A
(mandatory)

Limits for wood and manufacturing defects of outer layers of SVEZA LASER plywood

The limits for wood and manufacturing defects of outer layers of SVEZA LASER plywood are specified in Table A.1.

Table A.1

WOOD AND MANUFACTURING DEFECTS	LPR and LST type Grade B	LPR type BB grade	LST type BB grade	LST type CP grade
1. Pin knots	permitted			
2. Sound intergrown knots, light and dark	permitted light ones up to 15 mm in diameter with a check of up to 0.5 mm in the maximum number of 5 per m^2	permitted up to 15 mm in diameter with a check of up to 1.0 mm in the maximum number of 2 per m^2	permitted up to 25 mm in diameter with a check of up to 1.0 mm in the maximum number of 10 per m^2	permitted with a check of up to 1.5 mm wide
3. Partially intergrown knots	permitted within the limits specified in 4 of this Appendix, up to 6 mm in diameter in the maximum number of 3 per m^2	permitted within the limits for intergrown knots up to 15 mm in diameter in the maximum number of 2 per m^2	permitted within the limits for intergrown knots up to 15 mm in diameter in the maximum number of 10 per m^2	
4. Non-adhering knots, falling out knots, knot holes (without bark inclusion)	permitted within the limits for intergrown knots up to 6 mm in diameter in the maximum number of 3 per m^2	permitted within the limits for intergrown knots up to 6 mm in diameter in the maximum number of 2 per m^2	permitted within the limits for intergrown knots up to 6 mm in diameter in the maximum number of 6 per m^2	permitted up to 6 mm in diameter without quantity restrictions
5. Small checks	permitted up to 200 mm long in the maximum number of 5 per metre of the panel width	permitted up to 300 mm long in the maximum number of 5 per metre of the panel width		permitted at the edges and in the middle
6. Large checks	not permitted	permitted of a length of up to 250 mm, width of up to 2 mm in the maximum number of 3 per metre of the panel width		permitted of a length of up to 600 mm, width of up to 2 mm in the maximum number of 2 per metre of the panel width + permitted of a length of up to 600 mm, width of up to 5 mm provided that they are

Table A.1, continued

WOOD AND MANUFACTURING DEFECTS	LPR and LST type Grade B	LPR type BB grade	LST type BB grade	LST type CP grade
				repaired with a filler
7. Open joint of jointed veneer	no jointed veneer is permitted			
8. Irregularities in wood structure (sloping grain, curly grain, swirl, small knots from dormant buds)	permitted			
9. Defects of wood structure (intergrown inbark, light and dark)	only light inbark is permitted, dark inbark is permitted within the size range and number limits for non-adhering knots	light inbark is permitted, dark inbark is permitted within the size range for intergrown knots		
10. Defects of wood structure (open inbark)	permitted with the length within the limits for non-adhering knots			
11. Sound discoloration (false heartwood)	not permitted	permitted up to 25 % of the panel surface		permitted
12. Sound discoloration (spots, streaks, streak marks)	permitted light ones not more than 15 % of the panel surface area	permitted of a length of up to 250 mm, width of up to 10 mm in the maximum number of 10 per m^2	permitted	
13. Sound discoloration (group streaks)	permitted light ones not more than 15 % of the panel surface area	permitted of a size of not more than 60x40 mm in the maximum number of 1 per m^2	permitted	
14. Discoloration due to oxidation; sapwood discoloration caused by wood-staining fungi (blue stain, sapwood color stains), discoloration during storage	permitted not more than 30 % of the panel surface area	permitted within the limits including 11 of this Appendix not more than 50 % of the panel surface area	permitted	permitted
15. Biological defects (wormhole)	permitted in the total number within the limits for non-adhering knots			
16. Discolouration with	not permitted			

Table A.1, continued

WOOD AND MANUFACTURING DEFECTS	LPR and LST type Grade B	LPR type BB grade	LST type BB grade	LST type CP grade
partial wood damage				
17. Repairing of knots and holes with wood inserts	not permitted	inserts of different shapes and sizes are permitted in the maximum number of 8 per m^2		permitted with a gap of 1 mm on one side or 0.5 mm on both sides
18. Double plug	not permitted	permitted in the maximum number of 1 per m^2		permitted
19. Repairing of large checks with fillers or veneer inserts	not permitted	large checks more than 2 mm wide should be repaired with glued in veneer inserts or fillers		large checks more than 5 mm wide should be repaired with glued in veneer inserts
20. Bulges due to overlapping inner layers (marks indicating plies overlap)	not permitted	permitted of a length of up to 200 mm, width of up to 10 mm in the maximum number of 3 per panel		permitted of a length of up to 600 mm, width of up to 10 mm in the maximum number of 5 per panel
21. Overlap	not permitted	permitted of a length of up to 100 mm, width of up to 2 mm in the maximum number of 1 per metre of the panel width		permitted of a length of up to 300 mm, width of up to 2 mm in the maximum number of 2 per metre of the panel width
22. Marks left by tools and equipment (marks left by battens, stripes)	not permitted	permitted up to 10 % of the panel surface		permitted
23. Glue penetration	not permitted	permitted up to 5 % of the panel surface		permitted up to 5% of the panel surface (for a thickness between 3 mm and 21 mm) permitted up to 10% of the panel surface (for a thickness of 24 mm and more)
24. Marks left by tools and equipment, pinholes, kerfs	permitted in the total number within the limits for non-adhering knots			
25. Scratches, ridges, bumps, dents, crests	not permitted			permitted up to 0.5 mm high (deep), up to 120 mm long, up to 10 mm wide
26. Blisters, delamination (incl. in bending), bark	not permitted			

Table A.1, continued

WOOD AND MANUFACTURING DEFECTS	LPR and LST type Grade B	LPR type BB grade	LST type BB grade	LST type CP grade
pocket				
27. Sander skips (non-uniform sanding)	not permitted			permitted up to 5 % of the panel surface
28. Sanding through	not permitted			permitted up to 1% of the panel surface (for a thickness between 3 mm and 21 mm) permitted up to 2% of the panel surface (for a thickness of 24 mm and more)
29. Metal inclusions	not permitted			permitted non-ferrous metal staples
30. Rough peeling	not permitted	permitted up to 5 % of the panel surface		permitted up to 15 % of the panel surface
31. Waviness, fuzzy grain, ripple	not permitted			permitted
32. Surface roughness for uncoated plywood	roughness R_m is according to GOST 7016, μm, not more than 100			
33. Resin pocket (without bark inclusion)	not permitted	permitted within the limits for group streaks of a size of not more than 60x40 mm in the maximum number of 1 per m^2	permitted in the total number within the limits specified in 13 of this Appendix	permitted
34. Lengthwise veneer splicing	not permitted			
35. Glued-in pieces of veneer	not permitted			permitted of a length of up to 150 mm, width of up to 30 mm in the maximum number of 1 per panel
36. Deviations from permissible dimensions	dimensions according to 3.6.1, 3.6.2, 3.6.3, 3.6.4			
37. Warp	The warp is determined in accordance with 6.6.1			
38. Gradient spots	not permitted for plywood with at least one side of these grades			permitted
39. Weak edge	not permitted for plywood with at least one side of these grades			permitted

40. Burnt edge	not permitted for plywood with at least one side of these grades	permitted
Note: No defects not specified in Appendix A, Table A.1 are permitted		

APPENDIX B
(mandatory)

Terms and definitions of manufacturing defects of outer layers of SVEZA LASER plywood

The terms and definitions of manufacturing defects of outer layers of SVEZA LASER plywood are specified in Table B.1.

T a b l e B.1

Description of manufacturing defects	Definition
Glued-in pieces of veneer	Pieces of veneer glued (pressed) in plywood surface
Rough peeling	Plywood surface has frequent shallow depressions closely located to each other as a result of local wood removal during peeling
Pocket	Cavity inside wood or between growth rings that is filled with gums
Gradient spots (color variations in form of a screen)	Color variations in form of a screen on the plywood surface, either a dark one on a light background or light on a dark background.
Weak edge	A defect in form of an edge area with protruding/torn-out wood fiber bundles characterized by decreased density
Burnt edge	A surface area darkened by partial charring as a reaction to high temperature arising by the increased friction of cutting tools on wood

APPENDIX C
(mandatory)

Limits for wood and manufacturing defects of inner layers of SVEZA LASER Premium plywood

The limits for wood and manufacturing defects of inner layers of SVEZA LASER Premium plywood are given in Table C.1

T a b l e C.1

WOOD AND MANUFACTURING DEFECTS	LIMITS FOR DEFECTS OF PLYWOOD INNER LAYERS
1. Pin knots	permitted
2. Sound intergrown knots, light and dark	permitted of not more than 15 mm in diameter in the maximum number of 5 per panel
3. Partially intergrown knots	permitted of not more than 15 mm in diameter in the maximum number of 5 per panel
4. Non-adhering knots, falling out knots, knot holes (with-out bark inclusion), tobacco knots	permitted of not more than 15 mm in diameter in the maximum number of 5 per panel
5. Small checks	permitted
6. Large checks	permitted up to 2 mm wide, without length and quantity restrictions
7. Use of jointed veneer. Gap between adjacent pieces of jointed veneer	no jointed veneer is permitted
8. Use of spliced veneer	permitted if laser compatible glue is used
9. Bark	not permitted
10. Discoloration due to oxidation; sapwood discoloration caused by wood-staining fungi (blue stain, sapwood color stains), discoloration during storage without wood damage	permitted
11. Discolouration with partial wood damage	permitted not more than 5 % of the panel surface

Table C.1, end

WOOD AND MANUFACTURING DEFECTS	LIMITS FOR DEFECTS OF PLYWOOD INNER LAYERS
12. Biological defects (wormhole), marks left by tools and equipment (including pinholes from pike poles)	not considered of a size of up to 3 mm; permitted of a size of more than 3 mm in the total number within the limits for non-adhering knots
13. Repairing of checks, knot holes	permitted using veneer inserts of any shape and size without quantity restrictions
14. Soot, sooty dust, combustion products on veneer surface	not permitted
15. Sound discoloration (false heartwood, spots, streaks, group streaks)	permitted
16. Rough peeling	permitted
17. Open inbark without bark inclusion	permitted with the length within the limits for non-adhering knots

APPENDIX D
(mandatory)

Limitation standards for manufacturing defects in SVEZA LASER Melamine LST and LPR plywood

Limitation standards for manufacturing defects in SVEZA LASER Melamine plywood of LST and LPR types of are given in Table D.1.

Table D.1

Name of manufacturing defects	Limitation standards for manufacturing defects by grades		
	B	BB	CP
1. Printed structure of wood fibers, sound knots, inserts	Allowed		
2. Peeling, tearing, absence, shedding of the film	Allowed with the size of not more than 5x12 mm, 1 pc. on the panel surface along the edges	Allowed with the size of not more than 5 mm around the perimeter of the panel	Allowed
3. Temperature stains	Not allowed	Permitted without damaging the facing integrity	Allowed
4. Overlaps (folds, wrinkles) of the film	Allowed not more than 5 mm in width and not more than 100 mm in length, 1 pc. on the panel surface	Allowed of not more than 5 mm in width and not more than 500 mm in length, 1 pc/m^2	Allowed
5. Sticking film fragments	Allowed of the same color, with a total area not exceeding 60 mm^2 per the panel surface	Allowed of the same color, not exceeding 30x30 mm -1 pc/m^2; or not more than 10x100 mm - 1 pc/m^2	Allowed
6. Burnt film (burnout) from defects of the outer layer: cracks, damage, falling out knots, rough peeling	In accordance with Appendix A part 3, 4, 6, 10, 15, 30 of this standard		
7. Traces of inner layer defects 7a. Non-adhering knots, holes	Allowed without damaging the facing, not more than 15 mm in diameter; max. 5 pieces per panel surface	Allowed without damaging the facing, not more than 15 mm in diameter, unlimited by number	Allowed

Name of manufacturing defects	Limitation standards for manufacturing defects by grades		
	B	**BB**	**CP**
7b. Traces of defects of the inner layer: open joint, cracks	Not allowed	Allowed in width not more than 5 mm, length not more than 300 mm, max. 2 pieces on the panel surface	Allowed
8. Streaks and stains from equipment	Not allowed	Allowed without damaging the facing	Allowed
9. Film streaks and stains	Allowed		
10. Dents from waste	Not allowed	Allowed without damaging the facing, with a diameter of not more than 5 mm, 1 pc/m^2	Allowed
11. Scratches	Not allowed	Allowed not more than 2 mm in width, not more than 300 mm in length, 1 pc/m^2	Allowed
12. Sawing defects, chips on the edge	Allowed on each edge not more than 5 mm by size, 1 pc.	Allowed on each edge not more than 5 mm by size, 3 pc.	Allowed
13. Paint smudges	allowed, not more than 5 mm in width		Allowed
Note - Defects not listed in the table are not allowed			

APPENDIX E
(mandatory)

Terms and definitions of manufacturing defects in SVEZA LASER Melamine plywood

Terms and definitions of manufacturing defects in SVEZA LASER Melamine plywood are given in Table E.1

Table E.1

Name of manufacturing defects	Definition
Printed wood fiber structure, sound knots, inserts	Outlines of sound knots, wood fiber structure, inserts on the surface of SVEZA LASER Melamine plywood
Peeling, tears, shortcoming, peeling of film	Uncoated areas on SVEZA LASER Melamine plywood surface
Temperature stains	Film discoloration (with and/or without damaging the integrity of facing) due to premature curing of the film without pressure
Film overlaps (folds)	Local thickening caused by film overlap on the SVEZA LASER Melamine plywood surface
Sticking film fragments	Glued film fragments caught on the outer surface of SVEZA LASER Melamine plywood during the facing process
Burnt film (burnout) from defects of the outer layer	Film integrity damaging due to the defects in the outer layer
Traces of inner layer defects	Film integrity damage caused by defects in the inner layers
Streaks and stains from equipment	Streaks and stains on SVEZA LASER Melamine plywood surface caused by the equipment (press plates, belts, rollers)
Streaks and stains from the film	Abnormally colored areas of SVEZA LASER Melamine plywood surface due to the release of volatile film substances during pressing
Dents from waste	Local indentation of the outer layer without damaging the facing
Scratches	Damage to the facing of SVEZA LASER Melamine plywood by a sharp object in the form of a narrow long depression or local indentation of the outer layer with damage to facing
Cutting defects, chips on the edge	Defects characterized by a lack of facing on the edge of SVEZA LASER Melamine plywood panel
Paint smudges	Paint on SVEZA LASER Melamine plywood surfaces

Bibliography

[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 inspection – 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 – Bonding quality – Part 1: Test methods
[5] EN 310:1993	Wood-based panels – Determination of modulus of elasticity in bending and of bending strength
[6] GN (hygienic standards) 2.1.6.3492-17	Maximum allowable concentrations (MAC) of pollutants in the atmospheric air of urban and rural settlements
[7] GN (hygienic standards) 2.1.6.2309-07	Safe reference levels of impact (SRLI) of pollutants in the atmospheric air of populated areas. Hygienic standards
[8] GN (hygienic standards) 2.1.6.2328-08	Supplement to GN 2.1.6.2309-07 Safe reference levels of impact (SRLI) of pollutants in the atmospheric air of populated areas. Hygienic standards
[9]	Uniform sanitary, epidemiological and hygienic requirements to the goods subject to sanitary and epidemiological supervision (control) approved by Resolution of the Customs Union Commission No. 299 dated May 28, 2010
[10] DIN EN 13986 (German version of EN 13986-2004+A1-2015)	Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking

UDC (Universal Decimal Classification) 674-415:006.354 ICS (International Classification for Standards) 79.060.10 OKPD (Russian Classification of Products by Economic Activities) 2 16.21.12.119

Keywords: company standard, SVEZA LASER birch plywood, sizes, technical requirements, packaging, marking, inspection methods, transportation, storage, warranty.

Standard developer company
SVEZA-Les LLC