



SVEZA

LIMITED LIABILITY COMPANY SVEZA-Les

CORPORATE STANDARD

**SOUNDPROOF COMPOSITE PLYWOOD PANELS WITH
POLYMER LAYER
SVEZA ANTINOISE**

Technical Specifications

STO 52654419-017-2023

Saint Petersburg
2023

* 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

The goals and objectives of the development, as well as the use of organization standards for products in the Russian Federation, are established by Federal Law No 184-FZ dated 27 December 2002, On Technical Regulation, and Federal Law No 162-FZ dated 29 June 2015, On Standardization in the Russian Federation.

The rules for development and execution are established by GOST R 1.4-2004, Standardization in the Russian Federation. Corporate standards. General Provisions, taking into account GOST R 1.5-2012, Standardization in the Russian Federation. National standards. Rules of Structure, Drafting, Presentation and Indication.

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CORPORATE STANDARD

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LAYER SVEZA ANTINOISE
Technical Specifications**

**RUS: Панели из фанеры с полимер-
ным слоем композиционные звуко-
изолирующие SVEZA ANTINOISE
Технические условия**

Date of introduction 25 august 2023

1 SCOPE OF APPLICATION

This corporate standard (hereinafter referred to as **the standard**) applies to SVEZA ANTINOISE soundproof composite plywood panels with polymer layer (hereinafter referred to as **panels**) and parts made of it (hereinafter referred to as **parts**) intended for soundproofing in various vehicles, agricultural equipment, mechanical engineering products, and other areas.

2 NORMATIVE REFERENCES

This standard hereby incorporates normative references to the following standards:

GOST 12.1.004-91 Occupational safety standards system. Fire safety. General requirements.

GOST 12.1.005-88 Occupational safety standards system. General sanitary requirements for working zone air.

GOST 12.1.007-76 Occupational safety standards system. Noxious substances. Classification and general safety requirements.

GOST 12.1.018-93 Occupational safety standards system. Fire and explosion safety of static electricity. General requirements.

GOST 12.3.002-2014 Occupational safety standards system. Manufacturing processes. General safety requirements.

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

GOST 12.4.124-83 Occupational safety standards system. Means of static electricity protection. General technical requirements.

GOST 166-89 Vernier callipers. Specifications.

GOST 427-75 Measuring metal rulers. Specifications.

GOST 3749-77 Checking 90° squares. Specifications.

GOST 6507-90 Micrometers. Specifications.

GOST 7502-98 Measuring metal tapes. Specifications.

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

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

GOST 9625-2013 Laminated glued wood. Methods 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 mm and 0.1 mm. Specifications.

GOST 15150-69 Machines, instruments and other industrial products. Modifications for different climatic regions. Categories, operating, storage and transportation conditions as to environment climatic aspects influence.

GOST 27296-2012 Buildings and structures. Methods for measuring the sound insulation of enclosing structures.

GOST 30255-2014 Furniture, wood and polymeric materials. Method for determining the release of formaldehyde and other harmful volatile chemicals in climatic chambers.

GOST 30427-96 Plywood for general use. General rules for classification by appearance.

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

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

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

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

SanPiN 1.2.3685-21 Hygienic standards and requirements to ensure safety and / or harmlessness for humans of environmental factors

SP 1.1.1058-01 Organization and implementation of industrial control over compliance with the sanitary rules and implementation of sanitary and anti-epidemic (preventive) measures.

SP 2.2.3670-20 Sanitary and epidemiological requirements for working conditions.

TU 25-1893.003-90 Mechanical stopwatches. Specifications.

TU 5760-012-73212626-2011 NoiseBlock soundproofing self-adhesive technical material and its parts.

Note - When using this standard, it is advisable to check the validity of the reference standards in the information index "National standards".

3 TERMS AND DEFINITIONS

The following terms are used in this standard:

Polymer layer (material)	- an organic or inorganic substance consisting of individual monomers connected in long chains of macromolecules by chemical or coordinate bonds. It serves as a connecting layer in a panel.
Face and back layers	- uncoated plywood and/or film-faced plywood.
Panel	- product consisting of successively arranged layers of material of different chemical nature, connected to each other (face layer, polymer layer, back layer).
Part	- product of a given configuration made from a panel according to the drawing.

4 CLASSIFICATION AND DIMENSIONS

4.1 In terms of the water resistance degree of glue bond and on the intended end use, the panels are made of EXT/FSF plywood with a higher water resistance of the glue bond manufactured by using phenol-formaldehyde adhesives for indoor and outdoor use.

Note: EXT/FSF plywood panels are classified as EXT formaldehyde emission group.

4.2 Parts are made in a similar climate version (according to GOST 15150):

- U – for a macroclimatic region with a temperate climate;
- T – for macroclimatic regions with both dry and humid tropical climate.

4.3 Face and back layers of the panels/parts are divided into grades according to their appearance:

- BB, CP, C (if designated by Latin letters) and II, III, IV (if designated by Roman numerals), if not coated;
- 1, if film-faced.

4.4 Face and back layers of panels/parts without coating are made sanded in terms of surface machining.

4.5 Depending on the type of coating and method of the its application, the face and back layers of the panels/parts can be made as follows:

- F – with smooth surface;
- W – with wire-mesh pattern;
- UN – the surface has no film coating.

4.6 Dimensions

4.6.1 The length and width of the panels shall correspond to those specified in Table 1.

Table 1

In mm

Length (width) of panels	Tolerances
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. Panels may be manufactured with other dimensions and tolerances by agreement between the manufacturer and the customer
 2 The panel length is measured along the grain direction of the face and back layers.

4.6.2 Thickness of panels shall correspond to that specified in Table 2.

Table 2

Thick-ness of panel, mm	Thickness of polymer layer, mm	Thickness of face/back layer, mm	Number of layers of face/back layer	Tolerance on nominal thickness, mm	Thickness tolerance within one panel, mm
12	2	5+5	4+4	± 1.0	0.6
15	2	6.5+6.5	5+5	± 1.0	
	4	5+6.5	4+5	± 1.0	
18	2	8+8	6+6	± 1.0	
	4	6.5+8	5+6	± 1.0	
21	2	9+10	7+8	± 1.0	
	4	9+9	7+7	± 1.0	
24	2	11+12	8+9	± 1.0	
	4	11+11	8+8	± 1.0	
27	2	12+13	9+10	± 1.0	
	4	12+12	9+9	± 1.0	

Note: Panels may be produced with other thicknesses, number of plies, and tolerances by agreement between the manufacturer and the customer

4.6.3 Parts shall be made according to drawings approved by the customer.

4.6.4 Panels shall be cut at right angles. When using the control method according to 7.5.1, tolerance for squareness shall not exceed 1 mm per 1 m of the length of the panel edge.

When using the control method according to 7.5.2, the difference in the diagonal lengths shall not exceed 1 mm per 1 m of the panel edge length.

4.6.5 Tolerance for straightness of the panel edges shall not exceed 1mm per 1m of the panel edge length.

4.7 The reference designation of a panel shall include:

- product name;

- type;
- grade;
- emission class;
- type of surface treatment or type of surface;
- dimensions;
- type of film (for film-faced panels/parts);
- reference to this standard.

Example of a reference designation of *SVEZA ANTINOISE* plywood panel of EXT/FSF type, with face and back layers of BB/CP (II/III) grade, emission class E1, sanded on both sides, 1,220 mm long, 2,440 mm wide, 18 mm thick:

*Панели из фанеры SVEZA ANTINOISE / Plywood panel SVEZA ANTINOISE
EXT / ФСФ, BB/CP (II/III), E1, S2S/Ш2, 1220x2440x18
СТО 52654419-017-2023*

Example of a reference designation of *SVEZA ANTINOISE* plywood panel of EXT/FSF type, with face and back layers of grade 1/1, with smooth surface on both sides, emission class E1, 1,220 mm long, 2,440 mm wide, 18 mm thick, with DB 120/120 type of film:

*Панели из фанеры SVEZA ANTINOISE / Plywood panel SVEZA ANTINOISE
EXT / ФСФ, 1/1, F/F, E1, 1220x2440x18, DB 120/120
СТО 52654419-017-2023*

Example of a reference designation of *SVEZA ANTINOISE* plywood panel of EXT/FSF type, with face layer of grade 1 and back layer of grade CP, with smooth surface on one side and uncoated on the other side, emission class E1, 1,220 mm long, 2,440 mm wide, 18 mm thick, with DB 120 type of film:

*Панели из фанеры SVEZA ANTINOISE / Plywood panel SVEZA ANTINOISE
EXT / ФСФ, 1/CP, F/UN, E1, 1220x2440x18, DB 120/-
СТО 52654419-017-2023*

4.8 A reference designation of a part shall specify:

- part name;
- part number according to the drawing;
- emission class;
- total thickness of the part;
- thickness of the part layers (face/connecting/back);
- reference to this standard.

Example of a reference designation of the Floor Panel part of emission class E1, 18 mm thick, consisting of the following layers: face layer of film-faced plywood 8 mm thick, connecting layer of polymer material 2 mm thick, and back layer of film-faced plywood 8 mm thick:

Деталь «Панель пола» 422320-5102100, E1, T 18 (8/2/8)
СТО 52654419-017-2023 /
Floor Panel part 422320-5102100, E1, T 18 (8/2/8)
СТО 52654419-017-2023

5 TECHNICAL REQUIREMENTS

5.1 Characteristics

- 5.1.1 The following material is used as face and back layers of a panel or a part:
- uncoated plywood, EXT/FSF type, sanded, grades BB, CP, C ([Appendix A](#));
 - film-faced plywood, grade 1 ([Appendix B](#)).

Polymer material according to TU 5760-012-73212626-2011 is used as a connecting layer.

5.1.2 It is allowed to make up the face and back layers of BB grade from two or three veneer strips of the same width and color. Face and back layers of CP and C grades may be made up of an unlimited number of veneer strips and without color matching.

5.1.3 Veneer inserts of various shapes and sizes are used to patch knots, holes, and cracks. To repair defective areas up to max. 30 mm wide, rectangular veneer inserts may be used along the entire length of the defect. For grade CP and lower, a combination of inserts with different shapes on one panel surface may be used by agreement between the manufacturer and the customer.

The veneer inserts shall fit the surface, adhere firmly and be of the same wood species as the face or back layer of the uncoated plywood panel. For grade BB, the inserts shall match the wood color and the grain direction of the face or back layer of the uncoated plywood.

Putties shall be selected to match the wood color, they should ensure adhesion of facing materials, not crumble during mechanical processing, and not crack.

5.1.4 To protect the panel edges against moisture penetration, they are coated with acrylic water-emulsion paint having color in accordance with the customer's order.

5.2. The formaldehyde content in panels/parts and the formaldehyde emission from panels/parts into the room air shall correspond to those specified in Table 3.

Table 3

Emission class	Formaldehyde content per 100 g of oven dry board (perforator method), mg	Formaldehyde release	
		Chamber method, mg/m ³ of air	Gas analysis method, mg / m ² *h
E0.5	Up to 4.0 inclusive	Up to 0.01 inclusive	Up to 1.5 inclusive
E1	Up to 8.0 inclusive	Up to 0.124	Up to 3.5 inclusive or less than 5.0 within 3 days after manufacture

5.3 In terms of physical, mechanical and acoustic properties, the panels and parts shall meet the requirements in Table 4.

Table 4

Performance characteristics	Requirement
1 Sound insulation index R_w , not less than, dB	32
2 Ultimate strength in bending in length direction, minimum, MPa	30
3 Ultimate strength in bending in width direction, minimum, MPa	20
4 Modulus of elasticity in bending in length direction, minimum, MPa	4,000
5 Modulus of elasticity in bending in width direction, minimum, MPa	2,500
6 Moisture content, in %	5–12
Note: Parameter 1 is checked at the request of the customer	

5.4 Panels and parts are counted in cubic meters. The volume of a panel is calculated without rounding. The volume of formed bundles of panels and parts and the batch size — with an accuracy of 0.001 m^3 . The area of a panel or part is counted with an accuracy of 0.01 m^2 , while the total area of panels in the batch with an accuracy of 0.5 m^2 .

5.5 Each panel and part shall be labeled with the identification of the manufacturer.

5.6 Panel bundling and packaging

Panels shall be stacked into bundles with a total height of maximum 400 mm separately by grades, types of surface, dimensions, thicknesses, and types of film.

By agreement between the manufacturer and the customer, it is allowed to pack panels in bundles of other height.

Bundles of panels shall be packed to ensure their integrity and safety during transportation.

The main methods and types of package are regulated by LLC SVEZA-Les. By agreement between the manufacturer and the customer, other methods and types of panel packaging are allowed.

5.7 Parts bundling and packaging

Parts are packed horizontally on wooden pallets of a suitable size. They are protected against precipitation by wrapping the laid parts with polyethylene or stretch film.

Note:

1 It is possible to change the packaging if it ensures the safety of the part during transportation and storage.

2 Other packaging of parts is possible upon agreement with the customer.

5.8 Packed bundles of panels and parts shall be labeled.

The inscription is applied in Russian and/or English on two side plates parallel or perpendicular to each other. The content of the inscription on both covers is the same:

- trademark;
- product description: Plywood panel SVEZA ANTINOISE;
- geometric dimensions, thickness of panels/parts and thickness tolerances (if necessary);
- grade of panels/parts;
- type of panels/parts (EXT/FSF);
- type of surface of panels/parts;
- type of film (for film-faced panels/parts);
- number of panels/parts in a bundle;
- shift;
- date of production of panels/parts;
- emission class;
- order number for special requirements (applied by agreement between the manufacturer and the customer);
- technical specification according to which panels and parts are produced;
- manufacturer’s name and address;
- certification signs and quality control mark;
- handling signs: “Keep Dry” and “Use No Hooks”;
- barcode (if a data collection terminal (scanner) is available).

5.9 For convenience of work in the warehouse, it is allowed to apply additional marking in the form of a label or using a stencil.

6 ACCEPTANCE RULES

6.1 Panels and parts will be accepted in batches. A batch is a certain number of panels or parts of the same product description, grade, size, thickness, surface treatment, surface type, and film type.

The batch must be accompanied by a common document containing:

- trademark;
- manufacturer’s name and address;
- product designation;
- batch size
- reference document for product manufacturing;

6.2 The quality and dimensions of panels and parts are checked by random inspection. During random inspection, panels are sampled at random according to GOST R 50779.12 in the quantity specified in Table 5.

Table 5

In panels

Batch size	Controlled parameter by items			
	4.6.1; 4.6.2; 4.6.3; 4.6.4		5.1.1; 5.1.2; 5.1.3	
	Sample size	Acceptance number	Sample size	Acceptance number
Up to 500	8	1	13	1
501 to 1200	13	1	20	2
1201 to 3200	13	1	32	3

3201 to 10000	20	2	32	3
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6.3 Face and back layers of panels and parts are tested during the factory production control (Table 3, Table 4, items 2, 3, 4, 5):

- ultimate strength in bending in length and width direction, modulus of elasticity in bending in length and width direction, thickness and number of layers of a panel – at least once a month;
- formaldehyde release is determined at least once every 7 days.

6.4. Test results for formaldehyde release from uncoated and film-faced plywood used to manufacture face and back layers may be extrapolated to panels/parts from the same batch.

6.5 A batch of panels/part is considered to meet the requirements of this standard and is accepted if the sample contains:

- number of panels/parts that do not meet the standard requirements for dimensions, squareness, straightness, wood and machining defects is less than or equal to the acceptance number specified in Table 5;
- physical and mechanical properties correspond to the values specified in Table 4;
- formaldehyde release meets the requirements specified in Table 3.

6.6 Customer is entitled to perform an incoming inspection of panels and parts to verify their compliance with all the applicable requirements using the test methods set out in section 7 hereof.

7 CONTROL METHODS

7.1 The appearance of panels and parts is checked visually in accordance with the requirements of clauses 5.1.1–5.1.3 hereof.

7.2 Sampling is done according to GOST 9620, GOST 30255, GOST 32155, GOST 27678, [1], [2].

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

The arithmetic mean value of the four measurements is taken as the actual panel thickness.

The following instrumentation are used to measure thickness:

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

The thickness tolerance within one panel is determined as the difference between the largest and smallest thickness of the four measurements.

7.4 The length and width of a panel is measured in two points parallel to the edges at a distance of at least 100 mm from the panel edges by using metal tape with an accuracy of 1 mm in accordance with GOST 7502. The arithmetic mean value of the two measurement results is taken as the actual length (width).

7.5 Panel squareness

7.5.1. The panel squareness is measured according to GOST 30427. The squareness is measured with a measuring square as per GOST 3749. The squareness is determined by measuring the maximum deviation of a panel edge from the measuring square side by using a metal ruler in accordance with GOST 427 with an accuracy of 1 mm.

7.5.2 It is allowed to determine squareness by the difference of the panel's diagonal lengths measured by metal measuring tape according to GOST 7502 with an accuracy of 1 mm.

7.6 Straightness of edges of a birch plywood panel is determined by using a thickness gauge to measure the maximum gap between the panel's edge and the edge of a metal ruler according to GOST 8925, with an accuracy of 0.2 mm.

7.7 The sound insulation index is determined according to GOST 27296.

7.8 Ultimate strength and modulus of elasticity in bending are determined according to GOST 9625, [3].

7.9 Formaldehyde content is measured according to GOST 27678.

7.10 Formaldehyde release into the environment is determined according to GOST 30255, GOST 32155, [1].

7.11 Compliance of parts with the drawings is checked by using control templates or by direct measurement of the geometric dimensions of the parts by using a tape measure according to GOST 7502, a metal ruler according to GOST 427, a caliper according to GOST 166.

7.12 Moisture content is measured according to GOST 9621.

8 TRANSPORTATION AND STORAGE

8.1 Panels and parts are transported in closed vehicles in accordance with the cargo transportation rules in force for this type of transport.

During transportation, it is necessary to avoid wetting of panels and parts in order to prevent changes of the geometric, physical, and quality characteristics of the product.

8.2 Panels and parts are stored in packaging in the form of horizontally laid bundles on pallets or wooden pads, indoors, at a temperature of - 40°C to + 50°C and a relative humidity of maximum 80%.

9 MANUFACTURER'S WARRANTY

9.1 Manufacturer guarantees that the panels and parts comply with the requirements of this standard, provided that the customer observes the conditions of transportation, storage and operation.

9.2 The warranty period for panels/parts is 12 months from the date of production.

9.3 Upon expiration of the warranty period, the customer checks the panels/parts for their compliance with the requirements hereof and decides on their further use.

9.4 Service life of panels/parts corresponds to the service life of a vehicle, subject to proper operation and maintenance.

10 SAFETY AND ENVIRONMENTAL REQUIREMENTS

10.1 General requirements for production processes when working with panels/parts are specified in GOST 12.3.002 and SP 2.2.3670.

10.2 Sanitary and hygienic requirements for the air of the working area follow GOST 12.1.005, SanPiN 1.2.3685.

10.3 Operating conditions of staff shall comply with the applicable sanitary rules and regulations. Workers involved in production shall be provided with personal protective equipment in accordance with the requirements of the process. All employees shall undergo preliminary (upon employment) and scheduled medical examinations according to the applicable orders of the Ministry of Health of the Russian Federation.

Compliance with the sanitary rules and implementation of sanitary (preventive) measures shall be checked in accordance with SP 1.1.1058-01 during the production process.

10.4 Production premises will have local and general ventilation to ensure proper air condition of the working area in accordance with the sanitary rules and regulations SanPiN 1.2.3685.

10.5 Panels/parts are classified as hazard class 4 according to GOST 12.1.007 in terms of the degree of their impact on the human body. Use of panels/parts under normal conditions and at a temperature of less than 250°C does not have any harmful effect on the human body and does not require special precautions.

10.6 Requirements for ensuring fire safety in the premises in which the panels/parts are mounted shall comply with GOST 12.1.004.

10.7 Production and storage facilities shall be provided with the necessary fire extinguishing equipment.

Fire should be extinguished with all known extinguishing means.

10.8 Static charge may accumulate in the panel/part production process, and it affects the human body. Protection of equipment and utilities in areas of its possible accumulation shall follow GOST 12.1.018 and GOST 12.4.124.

10.9 Panels/parts do not contain any raw products, materials, and components classified as hazardous waste.

10.10 Concentration of harmful chemicals released during the operation of panels and parts into the air of residential premises and public buildings shall not exceed the requirements [4], [5], [6].

10.11 Panels and parts shall be produced using materials and components permitted for their use by the national sanitary and epidemiological authorities.

10.12 Persons at least 18 years of age and with no medical contraindications are allowed to panel and part production. Medical examinations are carried out in accordance with the current orders of the Ministry of Health of the Russian Federation.

10.13 Persons involved in the panel and part production shall be provided with personal protective equipment in accordance with GOST 12.4.011.

10.14 The value of the specific activity of cesium-137 in panels and parts shall not exceed the hygienic standards established in the requirements [7].

10.15 Panels and parts generally have a long lifespan, and there are several ways to dispose of them. Panels and parts shall be disposed of with account the requirements for disposal of the current legislation of different countries.

APPENDIX A
(mandatory)

Restrictions for defects inherent in wood and manufacturing defects in face and back layers without coating

Restrictions for defects inherent in wood and manufacturing defects in face and back layers without coating are given in Table A.1.

Table A.1

Defects inherent in wood and manufacturing defects	BB	CP	C
	(II)	(III)	(IV)
1 Pin knots	allowed	allowed	allowed
2 Sound knots, intergrown, light and dark	allowed up to 25 mm with a crack of up to 1 mm in the amount of 10 pcs/m ²	allowed with a crack up to 1 mm wide	allowed
3 Partially intergrown knots	allowed as intergrown knots with a diameter of up to 15 mm in the amount of 10 pcs/m ²	allowed as intergrown knots with a diameter of up to 10 pcs/m ²	allowed for a diameter of up to 40 mm with no restriction on number
4 Loose knots, falling out, and knot holes (without inbarks)	allowed as intergrown knots with a diameter of up to 6 mm in the amount of 3 pcs/m ²	allowed for a diameter of up to 6 mm with no restriction on number	allowed with a diameter of up to 40 mm without limitation of their number (bark at a knot with a width of 5 mm is allowed)
5 Closed cracks	allowed up to 300 mm in length in the amount not exceeding 5 pcs/m of the panel width	edge and middle cracks are allowed	edge and middle cracks are allowed
6 Open cracks, open joint on composed veneer	allowed up to 250 mm in length and 2 mm in width in an amount of 3 pcs/m of the panel width	allowed up to 600 mm in length and 2 mm in width in the amount of 2 pcs/m of the panel width + are allowed up to 600 mm in length and 5 mm in width if repaired by putties	allowed up to 800 mm in length and up to 10 mm in width without limitations of the number
7 Irregularities in the wood structure (angle grain, curly grain, spiral grain, dots)	allowed	allowed	allowed
8 Wood structure defects (light and dark inner inbarks)	Light inbarks are allowed, dark inbarks are allowed within the size of intergrown knots	Light inbarks are allowed, dark inbarks are allowed within the size of intergrown knots	Light inbarks are allowed, dark inbarks are allowed within the size of intergrown knots

Defects inherent in wood and manufacturing defects	BB	CP	C
	(II)	(III)	(IV)
9 Wood structure defects (open inbarks)	allowed, in total with the requirements for black knots	allowed, in total with the requirements for black knots	allowed, in total with the requirements for black knots
10 Sound discoloration (false heartwood)	allowed up to 25% of the panel surface	allowed up to 75% of the panel surface	allowed up to 75% of the panel surface
11 Sound discoloration (spotting, veins, vein marks)	allowed up to 250 mm in length and 10 mm in width in an amount of 10 pcs/m ²	allowed	allowed
12 Sound discoloration (group veins)	allowed if sized 60x40 mm in the amount of 1 pc/m ²	allowed	allowed
13 Chemical coloring; sapwood fungal discoloration (blue stain, colored sapstain), discoloration during wood storage	allowed with max 50% of the panel surface (together with the false heartwood)	allowed with max 75% of the panel surface (together with false heartwood)	allowed
14 Biological damage (wormhole)	allowed in the total number with the norms for ungrown knots	allowed in the total number with the norms for ungrown knots	allowed in the total number with the norms for ungrown knots
15 Discoloration which is partially wood destroying	not allowed	not allowed	not allowed
16 Repair of knots and holes with wood inserts	allowed in an amount of up to 8 pcs/m ²	allowed with a gap of 1 mm on one side or 0.5 mm on two sides	allowed
17 Double insert	allowed in an amount of 1 pc/m ²	allowed	allowed
18 Cracks repair Note: cracks repair with putty or inserts – by agreement with the customer	cracks over 2 mm in width must be sealed with glued veneer inserts	cracks over 5 mm in width must be sealed with glued veneer inserts	allowed
19 Pad rolls (pad marks)	Allowed with a length of up to 200 mm, width of up to 10 mm in the amount of 3 pcs/panel	are allowed up to 600 mm in length and width up to 10 mm in an amount of 5 pcs/panel	allowed
20 Overlap	allowed: maximum 100 mm in length and maximum 2 mm in width, in an amount of 1 defect per m of the panel width	is allowed up to 300 mm in length and 2 mm in width in an amount of 2 pcs/m of the panel width	allowed

Defects inherent in wood and manufacturing defects	BB	CP	C
	(II)	(III)	(IV)
21 Industrial stains (traces of beams, stripes)	allowed to max 10% of the panel surface	allowed	allowed
22 Glue penetration	allowed up to 2% of the panel surface (for a thickness of 3 to 21 mm), allowed up to 5% of the panel surface (for a thickness of 24 mm and more)	allowed up to 5% of the panel surface (for a thickness of 3 to 21 mm), allowed up to 10% of the panel surface (for a thickness of 24 mm and more)	allowed
23 Mechanical damages, pricks, cuts	allowed in the total number with the norms for ungrown knots	allowed in the total number with the norms for ungrown knots	allowed in the total number with the norms for ungrown knots
24 Scratches, ribs, bumps, dents	not allowed	allowed up to 0,5 mm in height (depth) up to 120 mm in length up to 10 mm width	allowed
25 Warping	in plywood up to 6.5 mm thickness are not considered, thicknesses over 6.5 mm are allowed no more than 15 mm per 1 m of the diagonal length of the plywood panel	in plywood up to 6.5 mm thickness are not considered, thicknesses over 6.5 mm are allowed no more than 15 mm per 1 m of the diagonal length of the plywood panel	in plywood up to 6.5 mm thickness are not considered, thicknesses over 6.5 mm are allowed no more than 15 mm per 1 m of the diagonal length of the plywood panel
26 Presence of a glue tape	not allowed	allowed	allowed
27 Bubbles, layering, bark pocket	not allowed	not allowed	not allowed
28 Unsanded spots (non-uniform sanding)	allowed 5 mm off the edge	allowed with max 5% of the panel surface	allowed with max 50% of the panel surface
29 Sanding through the outer layers	not allowed	allowed up to 1% of the panel surface (for a thickness of 3 to 21 mm), allowed up to 2% of the panel surface (for a thickness of 24 mm and more)	up to 5% of the panel surface
30 Metal inclusions	not allowed	non-ferrous brackets are allowed	non-ferrous brackets are allowed
31 Edge defects due to sanding, trimming, lack of veneer	allowed up to 5 mm in width along the edge	allowed up to 5 mm in width along the edge	allowed up to 10 mm in width

Defects inherent in wood and manufacturing defects	BB	CP	C
	(II)	(III)	(IV)
32 Rough peeling	up to 5% of the panel surface	up to 15% of the panel surface	allowed
33 Waviness (for sanded plywood), hairiness, rippling	not allowed	allowed	allowed
34 Surface roughness	roughness parameter R_m according to GOST 7016, μm , maximum: 100 for sanded plywood, 200 for unsanded plywood; columns with the same requirements to be combined		
35 Pocket (without in-barks)	allowed within the size of group veins (60x40 mm) of 1 pc/m ²	allowed	allowed
36 Glued veneer fractions	not allowed	allowed up to 150 mm in length and width up to 30 mm in quantity of 1 pc./panel	allowed

APPENDIX B
(mandatory)

Restrictions for defects in film-faced face and back layers

Restrictions for defects in film-faced face and back layers are given in Table B.1.

Table B.1

Defect description	Requirements for grade 1
1 Printed structure of wood fibers, sound knots, inserts	allowed
2 Peeling, tearing, absence, shedding of the film	allowed on a single edge of maximum 3 mm, provided that they are coated with a waterproof paint
3 Temperature stains	not allowed
4 Overlaps (folds, wrinkles) of the film	allowed a width of maximum 10 mm length not more than 500 mm in the amount of maximum 1 pc/m ²
5 Sticking film fragments	allowed with a size of maximum 30x30 mm in the amount of no more than 1 pc/m ² or 10x100 mm in the amount of maximum 1 pc/m ²
6a Burnt film (burnout) from defects in the outer layer: cracks, damage, falling out knots	not allowed
6b Burnt film (burnout) from defects in the outer layer: rough peeling	allowed if on maximum 2% of the panel area provided that the film is firmly glued
6c Burnt film (burnout) from defects in the outer layer: streaks and spots after sanding	not allowed
7a Traces of inner layer defects: falling out knots, holes	allowed as stains of maximum 25x25 mm in the amount of not more than 1 pc/m ²
7b Traces of inner layer defects: open joint, cracks	allowed a width of maximum 5 mm length not more than 300 mm in the amount of maximum 1 pc/m
8 Trace from a intergrown or composed veneer	allowed without damage to the lamination
9 Streaks and stains from press plates	allowed
10 Film streaks and stains	allowed for no more than 15% of the panel area
11 Local blisters on the plywood surface	not allowed
12 Veneer particles glued into the outer layer	not allowed
13 Press plate prints	allowed for no more than 5% of the panel area
14 Dents	allowed subject to the diameter being up to 6 mm, maximum up to 1 pc/m ² provided that the film is firmly glued
15 Scratches	not allowed

16 Cutting defects, chips on the edge	allowed with a length of max 3 mm, provided that they are coated with a waterproof paint
17 Paint smudges	allowed, a width of no more than 5 mm
18 Lack of veneer	not allowed
19 Local veneer delamination in the inner layers of plywood (hidden bubble)	not allowed

APPENDIX C
(mandatory)

Terms and definitions of manufacturing defects of overlaid face and back layers,

The terms and definitions of manufacturing defects are given in Table C.1.

Table B.1

Manufacturing defects	Definition
Printed wood fiber structure, sound knots, inserts	Contours of sound knots, structure of fibers of wood, inserts on the surface of film-faced plywood
Peeling, tearing, missing, peeling of film	Uncoated surface areas of film-faced plywood
Temperature stains	Film discoloration (with and/or without damage to the integrity of lamination) due to premature curing of the film without pressure
Film overlaps (folds)	Local thickening caused by film overlap on the plywood surface
Sticking film fragments	Glued film fragments caught on the outer surface of plywood during lamination
Burnt film (burnout)	Film integrity violation by defects in the outer layer
Traces of inner layer defects	Film integrity violation by defects in the inner layer
Streaks and stains from press plates	Streaks and stains on the surface of film-faced plywood due to contamination of the press plates
Streaks and stains from the film	Abnormally colored areas of the film-faced plywood surface from the release of film volatile substances during pressing
Local blisters on the plywood surface	Partial peeling of the film from the surface of the film-faced plywood
Veneer particles glued into the outer layer	Veneer particles glued into the outer layer of plywood before lamination
Press plate prints	Local bulges on the surface of film-faced plywood, formed due to the presence of defects on the lamination press plates
Dents	Local indentation of the outer layer without damage to the lamination
Scratches	Damage to lamination of film-faced plywood in the form of a narrow long recess or local indentation of the outer layer with damage to the lamination
Chips on the edge, cutting defects	Defects characterized by the absence of lamination on the edge of film-faced plywood panel
Paint smudges	Paint getting on the face of film-faced plywood panel
Lack of veneer	A defect characterized by the absence of part of the inner layer veneer, except for end knots and cracks
Local veneer layering in the inner layers of plywood (hidden bubble)	Separation of two adjacent veneer layers by a glue line
Wrinkles	Surface defect in the form of a group of alternating longitudinal indentations and protrusions of irregular shape and direction (resembling wrinkles or folds), resulting from improper operation of the film application station and/or poor quality film

End of Appendix C

Terms and definitions of processing defects of uncoated face and back layers,

Terms and definitions of processing defects of the face and back layers without coating are given in Table C.2.

Table B.2

Name of processing defects	Definition
Glued veneer fractions	The presence of glued (pressed) particles of veneer on the surface of plywood
Rough peeling	The presence on the plywood surface often located shallow depressions formed as a result of local removal of wood during peeling
Pocket	The cavity inside the wood or between annual layers, filled with resin or gums.

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