LIMITED LIABILITY COMPANY SVEZA-Les

COMPANY STANDARD

FILM-FACED BIRCH PLYWOOD SVEZA COLOR
Technical Specifications

STO 52654419-007-2024

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».*

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RUS: Фанера SVEZA COLOR березовая
Технические условия

Date of introduction «26» April 2024

1 SCOPE OF APPLICATION

This standard applies to film-faced birch plywood SVEZA COLOR with increased water resistance, faced with film based on thermosetting polymers (hereinafter referred to as SVEZA COLOR plywood). It is intended for use in construction, furniture industry, automotive, railcar and container industry, in the manufacture of packaging, as well as for manufacturing interior elements that require high decorative characteristics.

2 NORMATIVE REFERENCES

This standard incorporates normative references to the following standards:

GOST 427-75 Measuring metal rules. Basic parameters and dimensions. 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 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 mm and 0.1 mm. Specifications

GOST 14614-79 Plywood plus. Specifications

GOST 23234-2009 Wood particle boards. Method for determination of resistivity to separation of surface layer in direction normal to a plane

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

GOST 30255-2014 Furniture, wood 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 53920-2010 Laminated plywood. Specifications

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

STO 52654419-001-2024 Birch plywood for general use. Technical Specifications

STO 52654419-006-2024 Film-faced birch plywood. Technical Specifications

Note: 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 the water resistance degree of glue bond, film-faced birch plywood SVEZA COLOR belongs to EXT / FSF type. This plywood with increased water resistance of glue bond is manufactured by using phenol-formaldehyde adhesives and intended both for indoor and outdoor use.

Note: SVEZA COLOR plywood belongs to the EXT formaldehyde emission group.

3.2 Depending on surface appearance, SVEZA COLOR plywood is divided into grades 1 and 2.

3.3 Depending on the film color, SVEZA COLOR plywood can be of different shades, for example: white (WHITE), stone grey (STONE GREY), and others;

3.4 Depending on the type and method of coating, SVEZA COLOR plywood is subdivided by surface types:

- F – smooth surface;
- W – surface with wire-mesh pattern;
- UN (UNCOATED) – uncoated surface;
- H – surface with a "HEXA" pattern (regular hexagon).

Notes:

1. A combination of surface types is possible.
2. When placing orders and by marking bundles of SVEZA COLOR plywood, the quality of the uncoated panel side is indicated by the surface appearance grade according to STO 52654419-001.
3. On SVEZA COLOR plywood of grade 1/2 and surface type F/W and F/H, grade 2 always refers to side F.
4. By stacking SVEZA COLOR F/W and F/H plywood, the surface with the wire-mesh pattern shall be upwards.

3.5 Dimensions

3.5.1 The length and width of SVEZA COLOR plywood panels must be as shown in Table 1 below.

T a b l e 1

In millimeters

Length (width) of plywood panels	Tolerance
1,220, 1,250	± 3.0
1,500, 1,525	± 4.0
2,440, 2,500	± 4.0
3,000, 3,050	± 5.0
N o t e s: 1. It is permitted to produce SVEZA COLOR plywood with other dimensions and tolerances by agreement between the manufacturer and the customer. 2. The length of SVEZA COLOR plywood panel is measured along the grain direction of the face veneers.	

3.5.2 The thickness of SVEZA COLOR plywood must be as shown in Table 2 below.

T a b l e 2

In millimeters

Nominal thickness, mm	Number of plies	Tolerance on nominal thickness, mm	Thickness tolerance within one panel, max mm
6	5	± 0.3	0.2
6.5	5		
8	6 and 7		
9	7		
10	7 and 8		
12	9		
15	11		
18	13		
21	15		
24	17		
27	19		
30	21	± 0.5	
35	25		
40	28 and 29		
N o t e: It is permitted to produce SVEZA COLOR plywood of other thicknesses, number of layer and thickness tolerances by agreement between the manufacturer and the customer.			

3.5.3 SVEZA COLOR plywood panels shall be cut at a right angle.

Tolerance for squareness must not exceed 1 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 mm per 1 m of the panel edge length when controlled according to 6.4.2.

3.5.4 Tolerance for straightness of edges for SVEZA COLOR plywood must not exceed 1 mm per 1 m of the panel edge length.

3.6 The designation of SVEZA COLOR plywood shall include:

– product name with indication of wood species;
– type;
– grade;
– type of surface;
– coating color;
– emission class;
– dimensions;
– film type;
– reference to this standard.

Example of reference designation for film-faced birch plywood SVEZA COLOR WHITE, of EXT/FSF type, grade 1/1, with a smooth surface on both sides, E1 emission class; 2,440 mm long, 1,220 mm wide, and 12 mm thick, coated with WHITE 205/205 film:

Фанера SVEZA COLOR WHITE березовая ламинированная / Film Faced Birch Plywood SVEZA COLOR WHITE,
EXT / ФСФ, 1/1, F/F, E1, 2440 x 1220 x 12, WHT 205/205
СТО 52654419-007-2024

Example of reference designation for SVEZA COLOR HEXA STONE GREY film-faced birch plywood, of EXT / FSF type, grade 1/1, with a smooth surface type on one side and with HEXA surface on the other side, E1 emission class; 2,500 mm long, 1,250 mm wide, and 18 mm thick, coated with STONE GREY color film:

Фанера SVEZA COLOR HEXA STONE GREY березовая ламинированная / Film Faced Birch Plywood SVEZA COLOR HEXA STONE GREY,
EXT / ФСФ, 1/1, F/H, E1, 2500 x 1250 x 18, HEXA STONE GREY
СТО 52654419-007-2024

4 TECHNICAL REQUIREMENTS

4.1 Characteristics

4.1.1 To manufacture SVEZA COLOR plywood, a general-purpose plywood with outer and inner layers of birch veneer made according to STO 52654419-001-2018, of EXT / FSF type, sanded, min. WGE (III) grade is used.

The thickness of the veneer used for the outer and inner layers of SVEZA COLOR plywood shall not exceed 2 mm.

4.1.2, A paper impregnated with synthetic resins (hereinafter referred to as facing or film) is used to coat the outer surface of SVEZA COLOR plywood.

4.1.3 By agreement between the manufacturer and the customer, the edges of SVEZA COLOR plywood can be painted to protect them against moisture penetration.

The color of the edge protection shall imitate the color of the main facing.

4.1.4 Depending on the quality of the surface, SVEZA COLOR plywood shall be manufactured of the following grades: 1/1; 1/2; 2/2.

The surface appearance of SVEZA COLOR plywood shall meet the requirements set up in Appendix A.

Terms and definitions of manufacturing defects are given in Appendix B.

4.2. The formaldehyde content and the formaldehyde emission from SVEZA COLOR plywood into the room air shall correspond to that specified in Table 3.

T a b l e 3

Emission level	Formaldehyde content per 100 g of absolutely dry weight of plywood (perforator method), mg	Emission of formaldehyde	
		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 1.5 inclusive
E1	over 4.0 up to 8.0 inclusive	over 0.01 up to 0.124 inclusive	over 1.5 up to 3.5 inclusive or less than 5.0 within 3 days after production

4.3 The performance characteristics of SVEZA COLOR plywood are given in Tables 4 and 5.

T a b l e 4

Parameter	Thickness, mm	Physical and mechanical value
1 Moisture content, in %	6 – 40	5 – 12
2 Ultimate bending strength: - along the grains of outer veneer, MPa, min - across the grains of outer veneer, MPa, min	9 – 40	 60 30
3 Modulus of elasticity at bending: - along the grains, MPa, min - across the grains, MPa, min	9 – 40	 6000 3000
4 Ultimate tensile strength along the grains of the outer veneer, MPa, min	6 – 6.5	30
5 Strength of facing-to-veneer adhesion	6 – 40	The facing shall not flake off at the point of intersection of

Parameter	Thick-ness, mm	Physical and mechanical value
		the two notch lines.
6 Steam resistance of facing	6 – 40	No swelling. Slight loss of gloss. No bubbles.
7 Facing resistance to sodium hydrox-ide (NaOH)	6 – 40	The solution color the after the test (NaOH) is from light yellow to colorless.
8 Water resistance of facing	6 – 40	Stains and swelling are not allowed
9 Surface waviness of SVEZA COLOR ply-wood (ripping test)	6 – 40	Average beam length is no more than 20 mm
10 Resistance of facing to hydrochloric acid (HCl) – for melamine films	6 – 40	Slight gloss variations are permitted. The facing is solid and not subject to mechanical stress.

N o t e s:
1. Parameters from items (4-10) are chosen by agreement between the manufacturer and the customer.
2. Based on practical requirements of customers, it is possible to apply other test methods to as-sess the suitability of SVEZA COLOR plywood for its intended end use.

T a b l e 5

Mean shear strength, Mpa	Wood failure, %
Over 0.2 up to 0.4	Min 80
Over 0.4 up to 0.6	Min 60
Over 0.6 but less than 1.0	Min 40
1.0 or more	-

N o t e s:
1. SVEZA COLOR plywood test pieces are pre-treated before testing by one of the following ways:
1.1 boiling in water for 1 hour;
1.2 boiling in water for 6 hours;
1.3 boiling in water for 4 hours, drying in a ventilated cabinet at a temperature of (60 ± 3) °C for (16-20) hours, repeated soak in boiling water for 4 hours, cooling in water at a temperature of (20 ± 3) °C for 1 hour;
1.4 boiling for (72 ± 1) hours, cooling in water at a temperature of (20 ± 3) °C for 1 hour – once a quarter;
1.5 soaking for 24 hours in water at (20 ± 3) °C - once a quarter.
2. Pre-treatment methods 1.4-1.5 are used in case of testing new resins.
3. The method of test pieces pre-treatment is selected by agreement between the manufacturer and the customer.
4. The percentage of wood failure is determined visually.
5. Shear tests are done for different glue-lines by agreement between the manufacturer and the customer.

4.4 SVEZA COLOR plywood is accounted in cubic meters. The volume of one panel is calculated without round-up. A bundle and a batch volume of SVEZA COLOR plywood is calculated with an accuracy of 0.001 m^3. The area of SVEZA COLOR plywood panel is given with an accuracy to 0.01 m^2, the area of panels in a batch – with an accuracy of 0.5 m^2.

4.5 Marking is applied by using an indelible paint onto the edge of each panel of SVEZA COLOR plywood, no marking is applied onto the panel's face.

4.5.1 The marking is not applied automatically

4.5.2 The marking applied manually (stamp) should include the following information:

- manufacturer (number);
- shift;
- type of SVEZA COLOR plywood;
- grade of SVEZA COLOR plywood;
- date.

It is allowed to apply one stamp on (1-3) panels on birch plywood with thickness of 6 to 9 mm.

By agreement between the manufacturer and the customer, it is allowed:

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

4.6 SVEZA COLOR plywood stacking into bundles

SVEZA COLOR plywood shall be stacked in bundles with a height of 400, 600, or 900 mm separately by grade, surface type, dimensions, thickness, and film type.

By agreement between the manufacturer and the customer, it is permitted to pack SVEZA COLOR plywood in bundles of different height.

4.7 Packaging and marking of finished bundles of SVEZA COLOR plywood.

4.7.1 Bundles of SVEZA COLOR plywood shall be packed to ensure their integrity and safety during transportation.

To avoid warping of panels, SVEZA COLOR plywood with a thickness of up to 15 mm shall be packed on a substrate panel with a minimum thickness of 18 mm.

The main methods and types of packaging are regulated by SVEZA-Les LLC. By agreement between the manufacturer and the customer, other methods and types of SVEZA COLOR plywood packaging are possible.

4.7.2 Packaged bundles of SVEZA COLOR plywood shall be marked with self-adhesive labels with the dimensions 378x264 mm (A3) or 300x210 mm (A4).

The information is printed in Russian and / or English, and the labels are placed on two side plates parallel or perpendicular to each other. The content of the labels on both sides is the same:

- trademark;
- product name - Film-faced Birch Plywood SVEZA COLOR
- geometric dimensions, thickness of SVEZA COLOR plywood and thickness tolerances (if necessary);
- SVEZA COLOR plywood grade and surface type;

- SVEZA COLOR plywood trademark;
- type of film;
- number of panels in a bundle;
- shift;
- SVEZA COLOR plywood production date;
- emission level;
- order number for special requirements (applied by agreement between the manufacturer and the customer);
- reference to the standard or regulation according to which SVEZA COLOR plywood is manufactured;
- manufacturer's name and address;
- certification marks and technical inspection mark;
- handling signs: keep dry and use no hooks;
- bar code - if there is a data collection terminal (scanner).

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

4.8 The directions of use of SVEZA COLOR plywood are specified in Appendix C.

5 ACCEPTANCE RULES

5.1 SVEZA COLOR plywood shall be accepted in batches.

A batch is a certain number of SVEZA COLOR plywood panels of the same grade, surface type, film type and dimensions.

The batch shall be registered in one document containing:

- trademark;
- manufacturer's name and address;
- SVEZA COLOR plywood designation;
- batch size;
- reference to the regulatory document that SVEZA COLOR plywood complies with.

5.2 The quality and dimensions of SVEZA COLOR plywood panels are checked by random inspection. During random inspection, SVEZA COLOR plywood panels are sampled randomly according to GOST R 50779.12 in the quantity specified in Table 6.

T a b l e 6

In pieces

Batch size	Controlled parameter for items			
	3.5.1; 3.5.2; 3.5.3; 3.5.4		4.1.4	
	Volume of sampling	Acceptance number	Volume of sampling	Acceptance number
To 500	8	1	13	1
501 to 1200	13	1	20	2
1201 to 3200	13	1	32	3

3201 to 10,000	20	2	32	3

Determination of the sample size for items (4 – 10) of Table 4 is to be agreed between the manufacturer and the customer.

5.3 Moisture content, ultimate shear strength, ultimate bending strength and modulus of elasticity at bending along and across the grains of the outer layers, are tested for each thickness and number of layers of SVEZA COLOR plywood not less than once a month.

Inspection of each batch is possible by agreement between the manufacturer and the customer; for this purpose, 0.1% of the panels of a batch are sampled, but not less than one panel.

5.4 To control the formaldehyde release, one panel of SVEZA COLOR plywood is tested from any sample size.

The formaldehyde release is monitored no less than once every 30 days, as well as when the resin and / or glue formulation is changed.

5.5 The need for tests, their frequency and scope of control for items (4-10) of Table 4 shall be agreed between the manufacturer and the customer.

5.6. The results of formaldehyde release tests and physical and mechanical tests of a batch of plywood manufactured according to STO 52654419-001 may be applied to SVEZA COLOR plywood manufactured from the same batch.

5.7 A batch is considered to meet the requirements of this standard and is accepted if the samples include:

- the number of SVEZA COLOR plywood panels that do not meet the requirements of this standard in terms of dimensions, squareness, edge straightness, manufacturing defects is less than or equal to the acceptance number specified in Table 6;
- physical and mechanical properties correspond to the values specified in Tables 4 and 5;
- formaldehyde emission complies with the standards set in Table 3.

6 CONTROL METHODS

6.1 Sampling - according to GOST 9620, GOST 27678, GOST 30255, GOST 32155 [1] - [2].

6.2 The length and width of SVEZA COLOR plywood are measured at two points parallel to the edges at a distance of min 100 mm from the edges with a metal tape measure according to GOST 7502 with an accuracy of 1 mm. The arithmetic mean of two measurements results is taken as the actual length (width) of the panel.

6.3 The thickness is measured at a distance of min 25 mm from the edge in the middle of each side of the panel.

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

The following instrumentation is used to measure the panel 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.

Thickness variation in one panel of SVEZA COLOR plywood is determined as the difference between the largest and the smallest thickness of four dimensions.

6.4 SVEZA COLOR plywood panel squareness

6.4.1 The squareness of SVEZA COLOR plywood panel is measured according to GOST 30427. The squareness is measured with a checking square as per GOST 3749. The squareness is determined by measuring the maximum deflection of the panel edge from the surface of the reference square by using a metal ruler according to GOST 427 with an accuracy to 1 mm.

6.4.2 It is allowed to check the squareness by measuring difference of the lengths of the panel diagonals, measured by a metal tape measure according to GOST 7502 with a graduation value of 1mm.

6.5 The edge straightness of a SVEZA COLOR plywood panel is determined by measuring the maximum gap between the panel edge and the edge of the metal ruler with a feeler gauge according to GOST 8925 with an error of 0.2 mm.

6.6 Warping is determined according to GOST 30427.

6.7 Moisture content is determined according to GOST 9621, [3].

6.8 Ultimate shear strength of the glueline is determined according to GOST 9624, [4].

6.9 Ultimate bending strength and modulus of elasticity at bending are tested according to GOST 9625, [5].

6.10 Ultimate tensile strength along the grains is tested according to GOST 9622.

6.11 Resistivity to separation of surface layer – according to GOST 23234.

6.12 Manufacturing defects are measured according to GOST 30427.

6.13 Strength of facing-to-veneer adhesion – according to GOST 14614.

6.14 Steam resistance of facing – according to GOST R 53920.

6.15 Water resistance of coating – according to GOST 14614

6.16 Resistance of coating to hydrochloric acid (HCl) (for melamine films) – in accordance with Appendix D.

6.17 Formaldehyde content is determined according to GOST 27678 (this method is used as an arbitration method), formaldehyde emission into the environment is determined according to GOST 30255, GOST 32155 and [1].

7 TRANSPORTATION AND STORAGE

7.1 SVEZA COLOR plywood is transported in covered vehicles in accordance with the cargo transportation rules applicable to this type of transport.

7.2 During transportation, it is necessary to avoid strong moistening of SVEZA COLOR plywood to prevent swelling at the edges, warping of panels, strong indentation of the packing straps or other quality losses.

7.3 To avoid warping of panels, SVEZA COLOR plywood with a thickness of up to 15 mm shall be packed on a substrate panel with a min thickness of 18 mm.

7.4 Storage of SVEZA COLOR plywood

7.4.1 SVEZA COLOR plywood is stored in stacks in packaging in the form of horizontally stacked bundles on pallets and wooden pads / bars located in the same vertical plane and at a distance of 150-250 mm from the bundle edges.

7.4.2 SVEZA COLOR plywood is stored in closed rooms that protect plywood from atmospheric precipitation, at a temperature of minus 40 °C to plus 50 °C and a relative humidity of no more than 80%.

8 MANUFACTURER'S WARRANTIES

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

The guaranteed shelf life of SVEZA COLOR EXT / FSF plywood is 5 years from the date of receipt by the customer.

When using SVEZA COLOR plywood for further processing, it is recommended to contact the manufacturer to clarify the properties and characteristics of the plywood.

9 SAFETY AND ENVIRONMENTAL PROTECTION

9.1 The content of harmful chemicals released during the operation of SVEZA COLOR plywood products into the air of residential premises and public buildings shall not exceed the limits [6], [7], [8].

9.2 SVEZA COLOR plywood shall be manufactured using materials and components permitted for their use by the national sanitary and epidemiological authorities.

9.3 Persons who are at least 18 years of age and have no medical contraindications are allowed to produce SVEZA COLOR plywood. Medical examinations are carried out in accordance with the current orders of the Ministry of Health of the Russian Federation.

9.4 Persons involved in the production of SVEZA COLOR plywood shall be provided with personal protective equipment in accordance with GOST R 59123.

9.5 The value of the specific activity of cesium 137 in SVEZA COLOR plywood shall not exceed the hygienic standards established in the requirements [9].

9.6 The composition of standard SVEZA COLOR plywood does not contain raw products, materials, and components classified as hazardous waste.

9.7 As a rule, SVEZA COLOR plywood has a long service life, and shall be disposed of by several ways. Disposal of SVEZA COLOR plywood shall be carried out taking into account the requirements for disposal of the current legislation of different countries.

10 RECOMMENDATIONS FOR USE

10.1 SVEZA COLOR plywood is designed for multiple use. Compliance with the rules for the use and storage of plywood will increase its service life.

10.2 Insignificant deviation in thickness of SVEZA COLOR plywood is allowed under the influence of moist air during transportation along the edge at a distance of up to 50 mm from the edge.

10.3 Sawing of SVEZA COLOR plywood

SVEZA COLOR plywood shall be cut into parts using band or circular saws.

In order to obtain a clean cut, sawing shall be carried out correctly: first, sawing is performed across the direction of the grains of the front side, then along. This method allows avoiding splitting of the corners and reducing the size and number of chips on the face.

When sawing with a circular saw, a high speed and a low feed rate are recommended.

In case of sawing, to prevent moisture absorption, the ends of SVEZA COLOR plywood shall be treated with special types of acrylic waterborne paint or other sealant.

10.4 Drilling of SVEZA COLOR plywood

To prevent moisture from entering SVEZA COLOR plywood, all holes made during installation shall be filled with waterborne acrylic paint or other sealants, and it is recommended to treat the panel surfaces with a hydrophobic compound.

In order to obtain a hole with smooth edges, it is necessary to use a drill sharp enough and equipped with a front cutter.

Drilling shall start from the front side. In order to avoid splitting on the back side of the board, it is recommended to use a backing panel.

In order to avoid splitting of SVEZA COLOR plywood layers when using nails, it is recommended to use threaded nails or special screws. The recommended distance is considered to be the distance from the panel edge to the nail (12 – 15) mm.

10.5 Rippling is the usual undulating bumps on the surface of SVEZA COLOR, which are up to about 0.8 mm high and of various lengths, due to the wood processing technology and the properties of the wood material. They occur due to the absorption of water by plywood (photo 1).

Photo 1

These phenomena are especially often observed when using SVEZA COLOR plywood in conditions of direct contact with water.

When used indoors, sudden changes in climate during the day and / or seasonal precipitation conditions (for example, spring and autumn months) may also affect the appearance of the ripping effect.

The formation of waviness continues until full saturation with moisture to approximately 28% through cut edges, edges without additional protection with sealants, drilled holes, installed rivets or damage to the facing invisible to naked-eye inspection (photo 2).

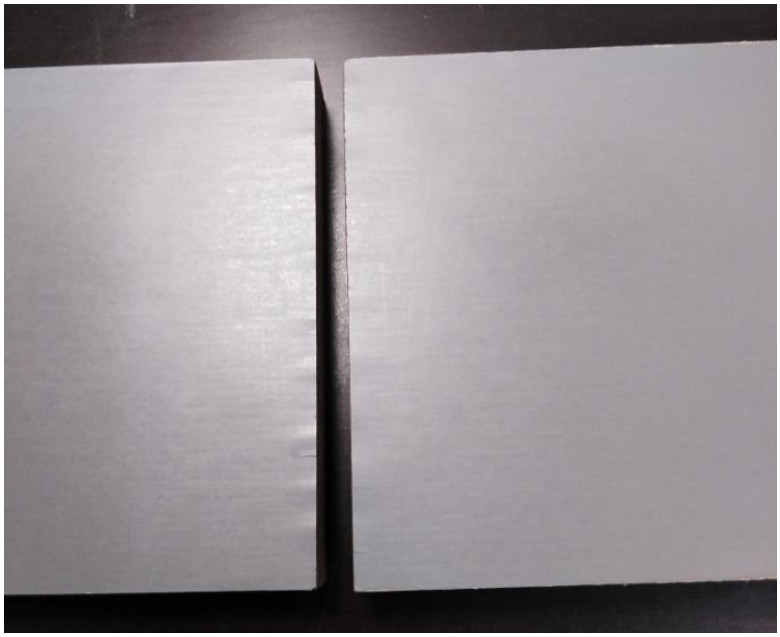

Photo 2

After complete saturation, undulation from the surface of SVEZA COLOR plywood panels almost completely disappears. As a rule, this occurs after (2-3) cycles of plywood contacts with water with drying between each contact.

APPENDIX A
(mandatory)

Manufacturing Defects Limits by Grades of SVEZA COLOR Plywood

Manufacturing defects permitted for the grades of SVEZA COLOR plywood are shown in Table A.1

T a b l e A. 1

Name of defects	**Limitations for manufacturing defects by grades**			
	1	**1 (for HEXA surface / web pattern)**	**2**	**2 (for HEXA surface / web pattern)**
1. Impression of wood grain structure, sound knots, inserts, burrs	Allowed			
2. Peeling, tears, lack or shedding of film	Not allowed		Not more than 2% of the panel surface area is allowed, provided that it is coated with a waterproof paint of the same color as the color of the film coating	
3. Temperature stains	Not allowed		Permitted without film integrity failure	
4. Film overlaps (folds, wrinkles)	Not allowed		Allowed	
5. Sticking of film fragments (double laminate)	Allowed with a total area of max 60 mm^2		Allowed	
6a. Burnt film (burnout) because of the defects in the outer layer: cracks, damage, not-adhering	Not allowed		Allowed	

Name of defects	**Limitations for manufacturing defects by grades**			
	1	**1 (for HEXA surface / web pattern)**	**2**	**2 (for HEXA surface / web pattern)**
knots				
6b. Burnt film (burnout) because of the defects in the outer layer: rough peeling	Not allowed		Allowed	
6b. Burnt film (burnout) because of the defects in the outer layer: streaks and spots after sanding	Not allowed		Max 25% of the panel surface area is allowed	
7a. Traces of inner layer defects: not-adhering knots, holes	Allowed in the form of spots without film integrity failure with a size of not more than 20x20 mm, not more than 1 pc./m^2		Allowed	
7b. Traces of the defects in the inner layers: open joint, cracks	Allowed without film integrity failure with a width of not more than 5 mm, a length of not more than 300 mm, not more than 1 per 1 m of panel length		Allowed	
8. Traces of veneer splicing	Permitted without film integrity failure		Allowed	
9. Streaks and stains from press plates	Not allowed		Allowed	
10. Streaks and stains from the film	Not allowed	Not allowed on the HEXA/web side of the panel; Allowed on the smooth side of the panel without film integrity failure	Allowed	

Name of defects	Limitations for manufacturing defects by grades			
	1	1 (for HEXA surface / web pattern)	2	2 (for HEXA surface / web pattern)
11. * Equipment streaks	Allowed on one side of panels but max only 20% of panels in a stack		Allowed	
12. Local blisters on the plywood surface	Not allowed		Allowed with a diameter of not more than 100 mm, not more than 1 pcs./m^2	
13. Veneer particles glued into the outer layer	Not allowed		Allowed	
14. Press plate prints	Not allowed		Allowed	
15. Dents	Allowed on one side of the panel as single defects of not more than 2 mm in size and without film integrity failure		Allowed to be not more than 0.5 mm deep without damaging the facing	
16. Waviness after sanding of the plywood base	Not allowed		Allowed	
17. Scratches	Not allowed		Allowed without film integrity failure	
18. Dark spots of natural origin (insect marks)	Allowed on one side of the panel with a total area of max 10 mm^2, max 1 piece per 1 meter of panel length		Allowed	
19. Sawing defects, chipped edges and corners	Allowed up to 1 mm, re-worked (sanded) (by ordering plywood with unpainted edges) Allowed up to 3 mm, re-worked (sanded) (by ordering plywood with painted edges)		Allowed with a length of max 10 mm, provided that they are coated with a waterproof paint	
20. Paint smudges (by edge painting)	Allowed, width not more than 5 mm		Allowed	
21. Lack of veneer	Not allowed		Allowed on one edge with a depth of not more than	

Name of defects	**Limitations for manufacturing defects by grades**			
	1	**1 (for HEXA surface / web pattern)**	**2**	**2 (for HEXA surface / web pattern)**
			5 mm	
22. Local veneer layering in the inner layers of plywood (hidden bubble)	Not allowed			
23. Deviations from the allowable dimensions	Dimensions according to paragraphs 3.5.1, 3.5.2, 3.5.3, 3.5.4			
24. Sticking of panels to each other	Not allowed			
25. Deviation of the pattern lines from the panel edge	Not applicable	Allowed not more than 3 mm per 1 m of the panel edge length	Not applicable	Allowed
26. Misprinted pattern structure	Not applicable	Not allowed	Not applicable	Allowed
27. Warping	For plywood up to 6.5 mm thick inclusive — not taken into account, for plywood thicker than 6.5 mm – allowed with a deflection of not more than 20 mm per panel when measured on a horizontal flat surface.			
28. Mechanical damages	Permitted on edges as for item 19 of this table. Not permitted on the plywood surface			
29. Overhangs and fringes of the coating, displacement and lack of film, cracks, tears and defacing of the coating	Not allowed			
Notes:				

Name of defects	Limitations for manufacturing defects by grades			
	1	1 (for HEXA surface / web pattern)	2	2 (for HEXA surface / web pattern)
1. Defects not listed in Appendix A are not allowed; 2. Plywood not complying with types 1 and 2 is downgraded to type 3 according to STO 52654419-006; 3. For coating of Type 1, the total number of defect types should not exceed three; 4. *If a defect under item 11 is detected, the equipment should be stopped and the cause of the defect is to be eliminated. 5. The surface quality assessment shall correspond to the reference sample.				

APPENDIX B
(mandatory)

Terms and definitions of manufacturing defects

Terms and definitions of manufacturing defects are given in Table B.1

T a b l e B.1

Name of manufacturing defects	Definition
Impression of wood grain structure, sound knots, inserts, burrs	Outlines of sound knots, wood fiber structure, inserts on the surface of film-faced plywood, rough peeling, without changing the structure and color of the film coating
Peeling, tearing, missing, shedding of film	Uncoated surface areas of film-faced plywood
Temperature stains	Film discoloration (with and/or without damage to the integrity of the film) due to premature film curing without pressure
Film overlaps (folds, wrinkles)	Local thickening caused by film overlap on the plywood surface
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 of the film
Sticking of film fragments (double laminate)	Glued film fragments caught on the outer surface of plywood during laminating operation
Burnt film (burnout)	Film caused by defects in the outer layer
Traces of inner layer defects	Discoloration of the film or its integrity failure due to the defects in the inner layers
Traces of veneer splicing	A streak on the surface of a plywood panel without damage or discoloration of the film, determined visually at different angles
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 caused by the release of film volatile substances during pressing
Streaks from the equipment	Glossy streaks along or across the plywood surface as a result of the impact of the equipment transport mechanisms or as a result of quality control checks
Local blisters on the plywood surface	Partial peeling of the film from the surface of the film-faced plywood

Name of manufacturing defects	Definition
Veneer particles glued into the outer layer	Veneer particles glued into the outer layer of plywood before facing
Press plate prints	Local bulges on the surface of film-faced plywood, formed due to the presence of defects on the facing press plates
Dents	Local indentation of the outer layer without film integrity failure
Waviness after sanding of plywood base	The presence of longitudinal or transverse streaks over the entire surface of the plywood with a uniform spacing
Scratches	Film damage in the form of a narrow long recess, or local indentation of the outer layer with film integrity failure
Dark spots of natural origin (insect marks)	Dark spots on the surface are mainly from insects
Sawing defects, chipped edges and corners	Defects characterized by the absence of facing on the edge of film-faced plywood panel
Paint smudges (when painting the edges)	Paint getting on the face of film-faced plywood panel
Lack of veneer	A defect characterized by the partial absence of veneer in the inner layer, 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
Deviations from the allowable dimensions	Dimensions of plywood are larger or smaller than the allowable dimensions and tolerances
Sticking of panels to each other	Persistent adhesion of film-faced plywood panels to each other along the face caused by paint smudges
Deviation of the pattern lines from the panel edge	The defect relates to HEXA coated plywood, deviation of the hexagonal pattern along the plywood edge line
Misprinted pattern structure	The defect relates to HEXA- / web-coated plywood, misprint (abrasion) of the hexagonal pattern, web
Warping	Deviation of panel flatness exceeding the values
Mechanical damages	A damage caused by mechanical impact causing a violation of the SVEZA COLOR plywood integrity
Overhangs and fringes of the coating, displacement and lack of film, cracks, tears and defacing of the coating	Process excess of the cured film size over the dimensions of the base plywood, lack of film at the panel edge area

APPENDIX C
(mandatory)

Intended applications of SVEZA COLOR plywood

The intended applications of SVEZA COLOR plywood are given in Table B.1

T a b l e B.1

Intended application	Element purpose	Note
Light commercial vehicles	Open elements of wall sheeting of trailers, boggies, bodies	For additional protection against the effects of water after cutting, elements and parts require edge protection (painting, protection with sealants, etc.)
Buses	Open elements of cabins, luggage compartments	
Boats, speedboats, ships, etc.	Open elements of the wall sheeting of cabins and other premises of ships. Open elements of inflatable boats and boats – transoms, seats, decks, rack decks, floorboards, slides	
Concert equipment package	External and internal elements of cases, trunks, suitcases, boxes	
Interiors	Finishing material for residential and public premises	
Other	Furniture elements for residential and public premises. Structural elements for outdoor use all year round, subject to additional processing of technical holes and / or structural joints and compliance with the rules of operation under aggressive exposure to sunlight, rain, snow and temperature differences from plus 40 °C to minus 50 °C (for playgrounds, benches, etc.)	

APPENDIX D
(mandatory)

SVEZA COLOR plywood surface waviness method (ripping test)

The following is used for testing:
- drill with a diameter of 1 mm;
- aluminum tape, waterborne acrylic paint, wax.

2 samples of SVEZA COLOR plywood with the size of 100x100 mm are taken for the test. It is allowed to use other dimensions of the samples, provided that the dimensions will not affect the test result**.** Both sides of the sample (top and bottom) shall be tested. No sample conditioning is required. Before testing, the ends of the samples are sealed with aluminum tape, paint or wax.

Testing and evaluation of results

1. On the surface of SVEZA COLOR plywood samples, punctures are made with a drill to the depth of the thickness of the facing and outer layer of plywood in the amount of 9 pieces according to Figure 1.

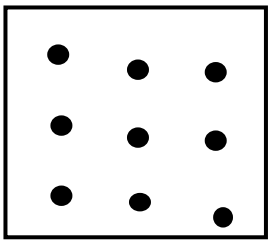

Figure 1

2. Samples with punctures are covered with a damp cloth and left for 2 hours, periodically wetting the cloth.

3. The test surface is subjected to visual inspection and measurements of waviness (rays) at the punctures using a measuring ruler or a tape measure according to GOST 7502.

The test result is the arithmetic mean of the results of 9 measurements.

APPENDIX E
(mandatory)

Facing resistance determination method hydrochloric acid (HCl) – for melamine films

The following is used for testing:
- glass cap or weighing bottle with a diameter of (30-40) mm;
- 5% HCl solution;
- a pipette;
- timer;
- ash-free filters.

2 samples of SVEZA COLOR plywood with the size of 100x100 mm are taken for the test. It is allowed to use other dimensions of the samples, provided that the dimensions will not affect the test result**.** Both sides of the sample (top and bottom) shall be tested. No sample conditioning is required. Before testing, the samples are kept for at no less than 24 hours. The sample temperature shall not exceed 20 °C.

Testing and evaluation of results

1. Take a 5% HCl solution into a pipette, pour it onto the sample, cover the poured solution with a glass cap and record the time.

2. After 20 minutes, the glass cap is removed, the residues of the HCl solution are removed from the surface of the sample with filter paper (ash-free filters).

3. Having scratched the sample with a sharp object, perform a visual inspection.

Note: This test can be made at the production site of plywood veneering, after its cooling (express test). In this case, a 4-normal HCl solution is used with a holding time of 20 minutes.

4. The facing resistance to hydrochloric acid is assessed on a three-point scale according to the change in the structure of the tested surface in accordance with Table E.1.

Table E.1

Obtained result	Surface change assessment
1. Film re-curing	No gloss variation, firm facing.
2. Full (normal) curing of the film	Slight gloss variation, the facing is firm and not subject to mechanical stress.
3. Complete undercuring of the film	Lack of gloss and leaching of resin, softening and swelling of the surface, the film detaches of the veneer, the film peels off after scratching.

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