	SVEZA-Les **Limited Liability Company**

COMPANY STANDARD

SVEZA COLOR FILM FACED BIRCH PLYWOOD

Technical specifications

STO 52654419-007-2020

Saint Petersburg
2020

Preface

The development goals and objectives as well as usage of company standards in the Russian Federation are defined by Federal Law No. 184-FZ “On Technical Regulation” dated December 27, 2002 and Federal Law No. 162-FZ “On Standardisation in the Russian Federation” dated June 29, 2015.

The development and presentation rules are established by GOST R 1.0-2012 “Standardisation in the Russian Federation. Basic provisions” and GOST R 1.4-2004 “Standardisation in the Russian Federation. Standards of organisations. General provisions” taking into account GOST R 1.5-2012 “Standardisation in the Russian Federation. National standards. Rules of structure, drafting, presentation and indication”.

Information on the Standard

1 DEVELOPED AND INTRODUCED by SVEZA-Les Limited Liability Company

2 APPROVED AND PUT INTO EFFECT by Order of the General Director of SVEZA-Les LLC No. 20 dated November, 2020

3 APPROVED by S. G. Sarson, the Marketing Director of SVEZA-Les LLC, on November 13, 2020

4 IN SUPERSESSION OF STO 52654419-007-2018

5 EXPERT OPINION OBTAINED from E. Yu. Tretyakova, an expert in the field of woodworking products certification, the Head of Fantest Nonprofit Partnership certification body, member of TC 121 technical committee for standardisation, dated November 20, 2020.

Table of contents

COMPANY STANDARD

SVEZA COLOR FILM FACED BIRCH PLYWOOD
Technical specifications

SVEZA COLOR Film Faced Birch Plywood
Technical requirements

Effective date December 4, 2020

1 SCOPE

This Standard applies to SVEZA COLOR waterproof birch plywood faced with a thermosetting polymer film (hereinafter referred to as SVEZA COLOR plywood) intended for use in construction and furniture industry and car, railway coach and shipping container manufacturing as well as for production of packaging and interior design elements complying with high aesthetic standards.

2 NORMATIVE REFERENCES

This Standard includes normative references to the following standards:

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

GOST 427-75 Measuring metal rules. Specifications

GOST 3749-77 Checking 900° squares. Specifications

GOST 6507-90 Micrometers. Technical specifications

GOST 7502-98 Measuring metal tapes. Technical specifications

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

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 Laminated glued wood. Methods for determination of ultimate strength and modulus of elasticity in tension

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

GOST 9625-2013 Laminated glued wood. Methods for determination of ultimate 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 Decorative plywood. Specifications

GOST 18321-73 Statistical quality control. Item random sampling methods

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 53920-2010 Laminated plywood. Specifications

STO 52654419-001-2018 General purpose birch plywood. Technical specifications

STO 52654419-006-2018 Film faced birch plywood. Technical specifications

N o t e: when using this Standard it is advisable to check the validity of the reference standards in the "National Standards" information index.

3 CLASSIFICATION AND SIZES

3.1 In terms of water resistance of adhesive bonding, SVEZA COLOR plywood is an exterior (EXT / ФСФ) type plywood characterised by an increased adhesive bonding resistance to water, bonded with phenol-formaldehyde glues and intended for interior and exterior use.

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

3.2 Based on the surface appearance, SVEZA COLOR plywood is divided into the following grades: 1, 2.

3.3 Depending on the film colour, SVEZA COLOR plywood may be of various colour shades such as WHITE, STONE GREY, etc.;

3.4 Based on the coating type and application method, SVEZA COLOR plywood is classified by surface type as:

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

Notes:

1. The surface types may be combined.
2. During orders processing and marking of SVEZA COLOR plywood packs, the grade of the outer ply in compliance with STO 52654419-001 is specified for an uncoated surface.
3. For SVEZA COLOR plywood of Grade 1/2 and surface type F/W and F/H, Grade 2 is always side F.
4. SVEZA COLOR F/W and F/H plywood sheets in a pack should be stacked so that the mesh surface faces upward.

3.5 Sizes

3.5.1 The length and width of SVEZA COLOR plywood sheets should correspond to the values specified in Table 1.

T a b l e 1

In millimeters

Plywood sheet length (width)	Maximum deviation

1,220, 1,250	± 3.0
1,500, 1,525	± 4.0
2,440, 2,500	± 4.0
3,000, 3,050	± 5.0
N o t e s: 1. SVEZA COLOR plywood may be produced in other sizes and with other maximum deviations as agreed upon between the manufacturer and the customer. 2. SVEZA COLOR plywood sheet length is determined parallel to grain direction of outer plies	

3.5.2 The SVEZA COLOR plywood thickness should conform to the values specified in Table 2.

T a b l e 2

In millimeters

Nominal plywood thickness	Number of plies, not less than	Maximum deviation	Thickness variation, not more than
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		
Note: SVEZA COLOR plywood may be produced in other thickness, number of plies and maximum deviations as agreed upon between the manufacturer and the customer.			

3.5.3 SVEZA COLOR plywood sheets should be cut at a right angle.

The out of square length should not exceed 1 mm per 1 m of the sheet edge length when controlled according to par. 6.4.1.

The difference in the lengths of the sheet diagonals should not exceed 1 mm per 1 m of the long sheet side when controlled according to par. 6.4.2.

3.5.4 The deviation from straightness of SVEZA COLOR plywood sheet edges should not exceed 1 mm per 1 m of the sheet edge length.

3.6 The SVEZA COLOR plywood designation should include the following information:

- name of the product with the wood species stated;
- category;

- grade;
- surface type;
- coating color;
- emission class;
- sizes;
- film type;
- identifier of this Standard.

Example of designation for SVEZA COLOR WHITE film faced birch plywood, EXT / ФСФ category, grade 1/1, smooth surface on both sides, E1 emission class, 2,440 mm long, 1,220 mm wide, 12 mm thick, WHITE 205/205 film colour:

Фанера SVEZA COLOR WHITE березовая ламинированная / SVEZA COLOR WHITE film-faced birch plywood,
EXT / ФСФ, 1/1, F/F, E1, 2,440 x 1,220 x 12, WHT 205/205
STO 52654419-007-2020

Example of designation for SVEZA COLOR HEXA STONE GREY film faced birch plywood, EXT / ФСФ category, grade 1/1, smooth surface on one side and HEXA surface on the other side, E1 emission class, 2,500 mm long, 1,250 mm wide, 18 mm thick, STONE GREY film colour:

Фанера SVEZA COLOR HEXA STONE GREY березовая ламинированная / SVEZA COLOR HEXA STONE GREY film-faced birch plywood,
EXT / ФСФ, 1/1, F/H, E1, 2,500 x 1,250 x 18, HEXA STONE GREY
STO 52654419-007-2020

4 TECHNICAL REQUIREMENTS

4.1 Characteristics

4.1.1 General-purpose, EXT / ФСФ category, grade WGE (III) or higher, sanded plywood with outer and inner plies of birch veneer, which is made in compliance with STO 52654419-001-2018, is used to produce SVEZA COLOR plywood.

Thickness of the veneer used for inner and outer plies of SVEZA COLOR plywood should not exceed 2 mm.

4.1.2 Paper impregnated with synthetic resin is used for coating the surface of SVEZA COLOR plywood (hereinafter referred to as the “film coating” or “film”).

4.1.3 SVEZA COLOR plywood ends may be coated with paint for plywood protection against moisture as agreed upon between the manufacturer and the customer.

The edge protection colour should imitate the colour of the film coating.

4.1.4 Based on the surface appearance, SVEZA COLOR plywood is divided into the following grades: 1/1; 1/2; 2/2.

4.1.3 The appearance of the surface of SVEZA COLOR plywood should comply with the standards specified in Appendix A. The terms and definitions of wood and machining defects are specified in Appendix B.

4.2 The formaldehyde content in and the formaldehyde release from SVEZA COLOR plywood in the indoor air should correspond to the values specified in Table 3.

T a b l e 3

Emission class	Formaldehyde content per 100 g of oven-dry weight (perforator method), mg	Formaldehyde release	
		Small-scale chamber method, mg/m^3 of air	Gas analysis method, mg/m^2*h
E 0.5	Up to and including 4.0	Up to and including 0.01	Up to and including 1.5
E1	Over 4.0 up to and including 8.0	Over 0.01 up to and including 0.124	Over 1.5 and up to and including 3.5 or less than 5.0 within 3 days after production

4.3 The physical and mechanical properties of SVEZA COLOR plywood are given in Tables 4 and 5.

T a b l e 4

Item	Thickness, mm	Values of physical and mechanical properties
1 Moisture content, %	6 – 40	5 – 12
2 Ultimate strength in static bending: - parallel to grain of outer plies, MPa, not less than - perpendicular to grain of outer plies, MPa, not less than	9 – 40	 60 30
3 Modulus of elasticity in static bending: - parallel to grain, MPa, not less than - perpendicular to grain, MPa, not less than	9 – 40	 6,000 3,000
4 Ultimate tensile strength parallel to grain of outer plies, MPa, not less than	6 – 6.5	30
5 Adhesive strength of bonding between the film coating and veneer	6 – 40	The film coating must not peel at the crossing point of two cuts.
6 Film coating resistance to steam	6 – 40	No swelling. Insignificant gloss impairment. No blisters.

Item	Thick-ness, mm	Values of physical and mechanical properties
7 Resistance of the film coating to sodium hydroxide (NaOH)	6 – 40	Solution colour after testing (NaOH) is light yellow to colourless.
8 Water resistance of the film coating	6 – 40	No stains and swelling are permitted
9 Waviness of SVEZA COLOR plywood, (Rippling test)	6 – 40	Average beam length is not more than 20 mm
10 Resistance of the film coating to hydrochloric acid (HCl) – for melamine films	6 – 40	Small gloss change is permitted. The film coating is hard and resistant to mechanical impacts.
N o t e s: 1. The values under par. 4-10 are selected as agreed upon between the manufacturer and the customer. 2. Other test methods based on practical requirements of customers may be used to make conclusions about fitness of SVEZA COLOR plywood for purpose.		

T a b l e 5

Average value of the ultimate shear strength along bondline, MPa	Wood failure, %
Over 0.2 up to and including 0.4	Greater than or equal to 80
Over 0.4 up to and including 0.6	Greater than or equal to 60
Over 0.6 but less than 1.0	Greater than or equal to 40
1.0 and more	-
N o t e s: 1. SVEZA COLOR plywood is prepared for the test using one of the following methods: 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 (60 ± 3) °C for (16-20) hours, second boiling in water for 4 hours, cooling in water at (20 ± 3) °C for 1 hour; 1.4 boiling for (72 ± 1) hours, cooling in water at (20 ± 3) °C for 1 hour: quarterly; 1.5 soaking in water at (20 ± 3) °C for 24 hours: quarterly. 2. Methods 2.3-2.5 are used to prepare SVEZA COLOR plywood for testing where new resins are tested. 3. The preparation method for the test pieces is selected as agreed upon between the manufacturer and the customer. 4. The wood failure percentage is determined visually. 5. The test for determining the shear strength along bondline is performed in different bondlines		

as agreed upon between the manufacturer and the customer.

4.4 SVEZA COLOR plywood volume is specified in cubic metres. The volume of one sheet is calculated without rounding. The volume of a SVEZA COLOR plywood pack and batch is calculated to an accuracy of 0.001 m^3. The area of a SVEZA COLOR plywood sheet is calculated to an accuracy of 0.01 m^2, the area of sheets in a batch – to an accuracy of 0.5 m^2.

4.5 The marking is made using an indelible ink and applied on the end of each SVEZA COLOR plywood sheet. No marking is applied to a face of a sheet. The marking should contain the following information:

- category of SVEZA COLOR plywood;
- grade of SVEZA COLOR plywood;
- a brief designation of the product according to the declaration of performance in accordance with [10] (as agreed upon between the manufacturer and the customer);
- manufacturer (code or name);
- thickness and/or sorter number.

It is permitted to apply one stamp per (1-3) sheets of SVEZA COLOR plywood of a thickness of 6 to 9 mm.

As agreed upon between the manufacturer and the customer, it is permitted:

- not to apply marking to SVEZA COLOR plywood sheets;
- to add additional information to the mandatory marking.

4.6 Stacking of SVEZA COLOR plywood

SVEZA OVERLAY plywood sheets should be stacked in packs of 400, 600 and 900 mm high sorted by grade, surface type, size, thickness and film type.

As agreed upon between the manufacturer and the customer, SVEZA COLOR plywood sheets may be stacked in packs of other heights.

4.7 Packaging and marking of ready for shipment SVEZA COLOR plywood packs

4.7.1 Packs of SVEZA COLOR plywood should have proper packaging to ensure its integrity and prevent damage during transportation.

The main methods and types of packaging are regulated by SVEZA-Les LLC. As agreed upon between the manufacturer and the customer, there may be used other methods and types of packaging for SVEZA COLOR plywood.

4.7.2 The marking to packaged packs of SVEZA COLOR plywood is applied in the form of adhesive labels 378x264 mm (A3 format). The text is written in the Russian and/or English language and the labels are placed parallelly or perpendicularly on two sides of the packaging. The text of both labels contains the same information:

- trademark;
- product name – SVEZA COLOR film faced birch plywood;
- sizes and thickness of SVEZA COLOR plywood and thickness tolerances (if required);

- grade and surface type of SVEZA COLOR plywood;
- category of SVEZA COLOR plywood;
- film type;
- sheets per pack;
- shift;
- SVEZA COLOR plywood date of production;
- emission class;
- order No. 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 COLOR plywood is produced;
- manufacturer name and address;
- certification markings and standard compliance mark;
- pictorial marking for handling of goods: “Keep dry” and “Use no hooks”;
- barcode if a data collection terminal (scanner) is available.

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

4.8 Applications of SVEZA COLOR plywood are listed in Appendix C.

5 ACCEPTANCE RULES

5.1 SVEZA COLOR plywood is accepted in batches.

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

One document should be issued for a batch, which contains the following information:

- trademark;
- manufacturer name and address;
- designation of SVEZA COLOR plywood;
- batch size;
- identifier of the regulatory document that SVEZA COLOR plywood complies with.

5.2 SVEZA COLOR plywood sheets quality and sizes are checked by selective sampling. The selective check involves random sampling of SVEZA COLOR plywood sheets according to GOST 18321 in the number specified in Table 6.

T a b l e 6

In sheets

Batch size	Controlled value under paragraphs			
	3.5.1; 3.5.2; 3.5.3; 3.5.4		4.1.4	
	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 Items 4-10 of Table 4 is agreed upon between the manufacturer and the customer.

5.3 Moisture content, ultimate shear strength along bondline, ultimate strength in static bending parallel and perpendicular to grain of outer plies, and modulus of elasticity in static bending parallel and perpendicular to grain of outer plies should be monitored for each thickness and number of plies of SVEZA COLOR plywood at least once a month.

As agreed upon between the manufacturer and the customer, such monitoring may be performed for each batch by selecting 0.1% of sheets from a batch (at least one sheet).

5.4 The control of the formaldehyde release involves selection of one sheet of SVEZA COLOR plywood from any size sample.

The formaldehyde release is controlled at least once every 30 days as well as when the resin and/or glue formula is changed.

5.5 The need for the test, its frequency and scope of control for Items 4-10 of Table 4 are agreed upon between the manufacturer and the customer.

5.6 The values obtained from physical and mechanical tests as well as formaldehyde release tests of a plywood batch manufactured according to STO 52654419-001 may apply to the SVEZA COLOR plywood manufactured in the same batch.

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

- the number of SVEZA COLOR plywood sheets non-compliant with the requirements of this Standard in terms of sizes, out of square length, straightness, machining defects is less or equal to the acceptance number specified in Table 6;
- the values of physical and mechanical properties correspond to the values specified in Tables 4 and 5;
- the formaldehyde release values correspond to the standard values specified in Table 3.

6 INSPECTION METHODS

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

6.2 SVEZA COLOR plywood length and width are measured in two points parallel to the edges at a distance of not more than 100 mm from the edges with a metal measuring tape according to GOST 7502 with an error of 1 mm. The actual sheet length (width) is the arithmetic mean of two measurement results.

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

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

The following instruments are used to measure thickness:

- a thickness gauge according to GOST 11358 graduated not more than in 0.1 mm;

- a micrometer according to GOST 6507 graduated not more than in 0.1 mm.

The thickness variation in one sheet of SVEZA COLOR plywood is defined as difference between the maximum and the minimum thickness values after four measurements.

6.4 Out of square length of SVEZA COLOR plywood sheet

6.4.1 The out-of-straightness of SVEZA COLOR plywood sheet is measured in accordance with GOST 30427. It is measured using a try square in accordance with GOST 3749 and determined by measuring the maximum deviation of the sheet edges from the try square surface using a metal ruler in accordance with GOST 427 to a tolerance of 1 mm.

6.4.2 It is permitted to determine the out of square length based on the difference of the lengths of the sheet diagonals measured using a metal measuring tape graduated in 1 mm in accordance with GOST 7502.

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

6.6 The warp is according to GOST 30427.

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

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

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

6.10 The ultimate tensile strength parallel to grain is according to GOST 9622.

6.11 The measurement of machining defects is according to GOST 30427.

6.12 The adhesive strength of bonding between the film coating and veneer is according to GOST 14614.

6.13 The film coating resistance to steam is according to GOST R 53920.

6.14 The film coating resistance to sodium hydroxide (NaOH) is according to GOST R 53920.

6.15 The water resistance of the film coating is according to GOST 14614.

6.16 The waviness of SVEZA COLOR plywood, (Rippling test) is according to Appendix D.

6.17 Resistance of the film coating to hydrochloric acid (HCl) (for melamine films) is in accordance with Appendix E.

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

7 TRANSPORTATION AND STORAGE

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

7.2 The transportation conditions should prevent a big increase of the SVEZA DRAWER plywood moisture content that may result in edges swelling, sheet warping, indentations due to the packing strap tightening or other quality deterioration.

7.3 The package for packs of SVEZA COLOR plywood sheets of a thickness of up to 15 mm should include a protective plywood base panel at least 18 mm thick to prevent sheets warping.

7.4 Storage of SVEZA COLOR plywood

7.4.1 SVEZA COLOR plywood in an appropriate packaging should be stacked flat on a level surface on pallets and wooden battens that lie in the same vertical plane at a distance of 150-250 mm from the pack edges.

7.4.2 SVEZA COLOR plywood is stored indoors to protect it against precipitation, at a temperature of -40 °C to +50 °C and relative humidity of not more than 80%.

8 MANUFACTURER'S WARRANTY

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

The guaranteed shelf life of SVEZA COLOR plywood of EXT / ФСФ category is 5 years from the day of receipt by the customer.

When SVEZA COLOR 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 COLOR plywood are used should not exceed the values specified by the requirements of [6], [7], [8].

9.2 SVEZA COLOR 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 COLOR 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 COLOR 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 COLOR plywood should not exceed the hygiene standards specified by the requirements of [9].

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

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

10 OPERATION GUIDELINES

10.1 SVEZA COLOR plywood is intended for repeated use. Compliance with the plywood use and storage rules extends its lifetime.

10.2. Insignificant deviation of SVEZA COLOR plywood thickness is permitted during transportation if caused by wet air at a distance of up to 50 mm from the edge.

10.3 Cutting of SVEZA COLOR plywood

Band or circular saws should be used to cut SVEZA COLOR plywood into parts.

The proper cutting procedure should be followed to produce a clean cut: first, cut perpendicular to grain of the face and then parallel to grain. This method prevents corner splintering and reduces the size and amount of chips on the surface.

When a circular saw is used we recommend cutting at a high speed and a low feed rate.

Always use special types of acrylate-based waterborne paint or other sealant for treating the sawn ends of SVEZA COLOR plywood after cutting to prevent moisture absorption.

10.4 Drilling of SVEZA COLOR plywood

All holes made during the installation work should be filled with acrylate-based waterborne paint or other sealant to prevent moisture ingress in SVEZA COLOR plywood and sheet surfaces should be treated with a waterproofing agent.

Use a sharp drill bit with a front cutting blade to produce a drill hole with smooth and clean edges.

Start drilling from the face side. Use a backing sheet to prevent any splintering on the reverse side of the plywood.

Instead of nails it is recommended to use screw nails or special screws to prevent SVEZA COLOR plywood splitting. The recommended distance from the sheet edge to a nail is (12-15) mm.

10.5 Rippling is characteristic ridges on SVEZA COLOR plywood surface of up to about 0.8 mm high and of various length that resemble a series of small waves and result from woodworking technology and wood properties. They may appear due to water absorption by plywood (Photo 1).

Photo 1

These phenomena are observed especially frequently when SVEZA COLOR plywood is directly exposed to water.

When the plywood is used outdoor, the rippling effect may be caused by a rapid climate change during a day or seasonal precipitation (for example, in spring or autumn).

The waviness formation is in progress until full saturation of plywood with moisture up to about 28% through the edges cut, edges with no additional protection by sealants, holes drilled, rivets installed or film damage to the coating that is not visible during unaided visual inspection (Photo 2).

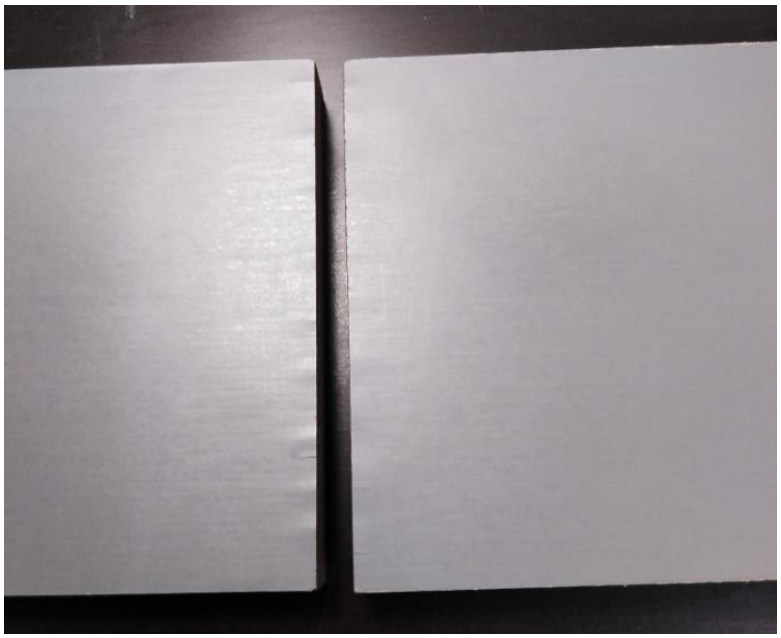

Photo 2

After full saturation waviness disappears from the surface of SVEZA COLOR plywood sheets almost completely. Usually it happens after (2-3) cycles of plywood contact with water including drying between contacts.

APPENDIX A

(mandatory)

Limits for machining defects of SVEZA COLOR plywood grades

The limits for machining defects of SVEZA COLOR plywood grades are given in Table A.1

T a b l e A. 1

Description of defects	**Limits for machining defects of plywood grades**			
	1	**1 (for HEXA surface)**	**2**	**2 (for HEXA surface)**
1. Wood grain structure visible on the surface	Permitted			
2. Contours of sound knots visible on the surface	Permitted of not more than 25 mm in diameter in the maximum number of 10 per m^2	Permitted: - not more than 25 mm in diameter on the mesh side in the maximum number of 10 per m^2; - without size and quantity restrictions on the smooth side	Permitted	
3. Contours of plugs visible on the surface	Permitted in the maximum number of 5 per the sheet surface	Permitted: - in the maximum number of 5 per sheet surface on the mesh side; - without size and quantity restrictions on the smooth side	Permitted	
4. Peeling, tearing, flaking, missing film	Not permitted		Permitted of a length of not more than 3 mm	

Description of defects	Limits for machining defects of plywood grades			
	1	1 (for HEXA surface)	2	2 (for HEXA surface)
5. Thermal discoloration	Not permitted		Permitted without damage to the film coating	
6. Film overlap (folds, wrinkles)	Not permitted		Permitted of a width of not more than 5 mm, length of not more than 100 mm in the maximum number of 1 per the sheet surface	
7. Pieces of film stuck on the surface (double laminate)	Permitted with the total area of not more than 10 mm^2 on one side of the plywood sheet		Permitted with the total area of not more than 60 mm^2 on one side of the plywood sheet	
8a. Burnt film (burnout) due to outer layer defects: checks, damage, fallen out knots	Not permitted		Permitted without damage to the film coating: - not more than 150 mm^2 on one side of a sheet; - not more than 25% of the total area on the other side of a sheet;	
8b. Burnt film (burnout) due to outer layer defects: coarse peeling	Not permitted		Permitted without damage to the film coating in the total number within the limits specified in par. 8a of this Table: - not more than 150 mm^2 on one side of the plywood sheet; - not more than 25% of the total area on the other side of a sheet;	
8c. Burnt film (burnout) due to outer layer defects: stripes and stains from sanding	Not permitted		Permitted without damage to the film coating in the total number within the limits specified in par. 8a of this Table: - not more than 150 mm^2 of the total area on one side of the plywood sheet; - not more than 25% of the total area on the other side of a sheet;	
9a. Marks from inner layer defects: fallen out knots, holes	Not permitted		Permitted without damage to the film coating: on one side of the sheet of not more than 5 mm in diameter in the maximum number of 1 per m^2; - not more than 20 mm in diameter on the other side of the sheet in the maximum number of 3 per m^2 ;	
9b. Marks from inner layer defects: open joint, checks	Not permitted		Permitted without damage to the film coating: of a length of not more than 300 mm, width of not more than 5 mm on one side of the sheet in the maximum number of 1 per metre of the sheet width; - of a length of not more than 500 mm, width of not more	

Description of defects	Limits for machining defects of plywood grades			
	1	1 (for HEXA surface)	2	2 (for HEXA surface)
	than 5 mm on the other side of the sheet in the maximum number of 2 per metre of the sheet width;			
10. Marks from jointed or spliced veneer	Not permitted		Permitted without damage to the film coating	
11. Stripes and marks from press plates	Not permitted		Permitted without damage to the film coating	
12. Stripes and stains from the film	Not permitted		Permitted without damage to the film coating	
13. Local swelling on the plywood surface	Not permitted			
14. Pieces of veneer glued in the outer layer	Not permitted			
15. Marks left by the press plates	Not permitted			
16. Dents	Not permitted		Permitted without damage to the film coating, of not more than 5x5 mm in the maximum number of 1 per m^2	
17. Waviness resulting from plywood core sanding	Not permitted		Only permitted on one side of a sheet	
18. Scratches	Not permitted			
19. Natural dark spots	Not permitted		Permitted of not more than 2x2 mm in the maximum number of 5 per sheet surface	
20. Cutting defects, splintered edges and corners	Not permitted		Permitted of a length of not more than 3 mm	
21. Paint runs (after painting the edges)	Not permitted			
22. Missing veneer	Not permitted			
23. Local veneer delamination in inner plies (hidden bubble)	Not permitted			
24. Permissible size devia-	Not permitted			

Description of defects	**Limits for machining defects of plywood grades**			
	1	**1 (for HEXA surface)**	**2**	**2 (for HEXA surface)**
tions				
25. Sheets sticking together	Not permitted			
26. Pattern lines deviation from straightness relative to the plywood sheet edge	Not applicable	Permitted not more than 2 mm per 1 m of the length of the plywood sheet edge, the maximum deviation not more than 3 mm of the sheet length	Not applicable	Permitted not more than 2 mm per 1 m of the length of the plywood sheet edge, the maximum deviation not more than 3 mm of the sheet length
27. Missing pattern lines	Not applicable	Not permitted	Not applicable	Permitted if insignificant, as fragmentary areas evenly located on the sheet, but not more than 10 % of the sheet surface area
28. Warp	It is not considered for plywood up to and including 6.5 mm thick, for plywood over 6.5 mm thick it is permitted with the maximum deflection of not more than 20 mm per a plywood sheet when measured on a flat horizontal surface.			
29. Film hanging over the edge and fringe, film shift and missing film, cracks, torn out coating and coating delamination	Not permitted			

Notes:
1. No defects not specified in Appendix A are permitted;
2. The plywood non-conforming to grades 1 and 2 should be converted to grade 3 in accordance with STO 52654419-006;
3. For a grade 1 coating, the total number of types of simultaneously occurring defects should not exceed three;
4. For a grade 2 coating, the total number of types of simultaneously occurring defects should not exceed five;
5. For grade 1/2, if waviness is present on the grade 2 side no other defects are permitted;
6. Surface quality evaluation should be made in comparison with the reference sample.

APPENDIX B

(mandatory)

Terms and definitions of machining defects

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

T a b l e B. 1

Description of machining defect	Definition
Wood grain structure, contours of sound knots and plugs visible on the surface	Contours of sound knots, plugs, wood grain structure on the surface of film faced plywood
Peeling, tearing, flaking, missing film	Areas of the film faced plywood surface not coated with film
Thermal discoloration	Film discolouration (with and/or without damage to the film coating) due to premature film curing without pressure
Film overlaps (folds, wrinkles)	Local thickening caused by the film overlap on the plywood surface
Wrinkles	Surface defect in the form of a group of alternating longitudinal depressions and bulges of irregular shape and random direction (resembling wrinkles or folds) resulting from improper operation of the film application machine and/or poor film quality
Pieces of film stuck on the surface (double laminate)	Film pieces that stuck to the plywood outer surface in the process of film application
Burnt film (burnout)	Damage to the film breach due to outer layer defects
Marks from inner layer defects	Damage to the film breach due to inner layer defects
Stripes and marks from press plates	Stripes and stains on the film faced plywood surface due to dirt accumulation on the press plates
Stripes and stains from the film	Discoloration areas of film-faced plywood surface due to emission of volatile substances of the film during pressing
Local swelling on the plywood surface	Partial peeling of the film from the surface of film faced plywood
Pieces of veneer glued in the outer layer	Pieces of veneer glued in the outer layer of plywood before film application
Marks left by the press plates	Local bulges on the film faced plywood surface formed due to defects on the lamination press plates
Dents	Local indentation of the outer layer without damage to the film coating
Waviness resulting from plywood	Equally spaced vertical and horizontal stripes all

Description of machining defect	Definition
core sanding	over the plywood surface
Scratches	Damage to the film coating of a film-faced plywood in a form of a long narrow scrape made with a sharp object or a local indentation in the outer layer damaging the film coating
Natural dark spots	Dark spots on the surface mostly caused by insects
Cutting defects, splintered edges and corners	Defect characterised by missing film coating on the edges of film faced plywood sheets
Paint runs (after painting the edges)	Paint on the film faced plywood surface
Missing veneer	Defect characterised by the absence of some part of the inner layer veneer except for knots and checks on the ends
Local veneer delamination in inner plies (hidden bubble)	Splitting of two adjacent veneer layers along bondline
Permissible size deviations	Plywood sheet dimensions are greater or less than the permissible dimensions and tolerances
Sheets sticking together	Firm sticking together of film faced plywood surfaces caused by paint runs
Pattern lines deviation from straightness relative to the plywood sheet edge	This is a HEXA plywood defect that manifests itself as a deviation of the hexagonal pattern along the plywood edge
Missing pattern lines	This is a HEXA plywood defect that manifests itself as missing (hardly visible) lines of the hexagonal pattern
Warp	Deviation of the plywood sheet plane exceeding the values
Film hanging over the edge and fringe, film shift and missing film, cracks, torn out coating and coating delamination	This defect manifests itself as a size mismatch in the production process where the cured film size is bigger than the substrate sheet size, the film is missing along the substrate sheet edges

APPENDIX C

(mandatory)

SVEZA COLOR plywood applications

The SVEZA COLOR plywood applications are listed in Table C.1

T a b l e C.1

Application	Purpose	Note
Light commercial vehicles	Exposed elements of trailer and cargo bed wall lining	Elements and parts after cut-

Buses	Exposed elements of cabins, luggage compartments	ting require edge protection (paint, sealants, etc.) to ensure additional waterproofness
Boats and other vessels	Exposed elements of wall siding in passenger areas and other parts of a vessel. Exposed elements of inflatable boats and cutters: transoms, seats, decks, floorboards	
Packaging for stage equipment items	External and internal elements of cases, trunks, suitcases, boxes	
Interior design	Finishing material for residential and public premises	
Other	Furniture items for residential and public premises. Structural elements to be used outdoor all-year round (playgrounds, benches, etc.) provided that technical holes and/or structural connection points are additionally treated and rules of operation under the conditions involving direct exposure to sunlight, rain, snow and temperature range of +40 °C to -50 °C are observed.	

APPENDIX D

(mandatory)

Method of determination of SVEZA COLOR plywood waviness (Rippling test)

The test setup includes:
- a drill bit, 1 mm in diameter;
- aluminum tape, acrylate-based waterborne paint, wax.

Two 100x100 mm test pieces of SVEZA COLOR plywood are taken for the test. Test pieces of other sizes may be used provided that the size does not affect the test result**.** Both surfaces (face and back face) of the test piece should be tested. No test piece conditioning is required. Ends of the test pieces are sealed with aluminum tape, paint or wax before the test.

Test procedure and assessment of results

1. 9 holes are pricked with a drill bit in the surface of SVEZA COLOR plywood test pieces as deep as the thickness of the film coating and plywood outer ply as shown in Figure 1.

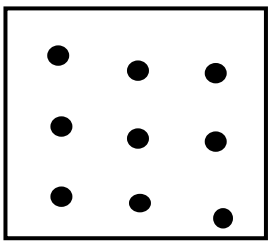

Figure 1

2. The test pieces with pricked holes are covered with a wet cloth and left for 2 hours; the cloth should be wetted regularly.

3. The tested surface is visually inspected and waviness (beams) is measured at the holes using a ruler or measuring tape according to GOST 7502.

The arithmetic mean of 9 measurements is the test result.

APPENDIX E

(mandatory)

Method for determination of the film coating resistance to hydrochloric acid (HCl) – for melamine films

The test setup includes:
- a glass cup or weighing bottle 30-40 mm in diameter;
- 5% solution of HCl;
- pipette;
- stopwatch;
- ash-free filters.

Two 100x100 mm test pieces of SVEZA COLOR plywood are taken for the test. Test pieces of other sizes may be used provided that the size does not affect the test result**.** Both surfaces (face and back face) of the test piece should be tested. No test piece conditioning is required. The test pieces are held for at least 24 hours before testing. The test piece temperature should not exceed 20 °C.

Test procedure and assessment of results

1. Fill a pipette with 5% solution of HCl, drip the solution on the test piece, cover the solution with a glass cup and set the timer to 20 minutes.

2. Remove the glass cup in 20 minutes, wipe the residual HCl solution with a filter paper (ash-free filter) from the test piece surface.

3. Scratch the test piece with a sharp tool and inspect visually.

Note: This test can be performed on the work site where the film is applied on plywood, after it cools down (express test). For this purpose a 4-normal solution of HCl is used and a 20 minute holding time is required.

4. The resistance of the film coating to hydrochloric acid is assessed using the three-point scale based on the tested surface structure changes according to Table E.1.

Table E.1

Result obtained	Surface change evaluation
1. Film overcuring	No gloss changes, the film coating is hard.
2. Full (normal) film curing	Slight gloss change, the film coating is hard and resistant to mechanical impacts.
3. Fully undercured film	No gloss; resin washout; surface softening and swelling. Film detaches from veneer; film peels off after scratching.

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 16.21.12.113

Keywords: company standard, SVEZA COLOR film-faced birch plywood, sizes, technical requirements, packaging, marking, inspection methods, transportation, storage, warranty.

Standard developer company
SVEZA-Les LLC

Head of the Standard developer company:
General Director
SVEZA-Les LLC _____A. S. Frishman

Standard development team leader:
Director of Production
SVEZA-Les LLC _____O. V. Chistyakov

Prepared by:
Head of Quality Department
SVEZA-Uralsky LLC _____ E. B. Vershinina