



## **CORPORATE STANDARD**

### **FILM FACED BIRCH PLYWOOD Specifications**

**STO 00255177-002-2014**

Kostroma  
2014



## APPROVAL FORM

### to STO 00255177-002-2014 Film Faced Birch Plywood Specifications

**Approved by:**

OOO SVEZA Forest  
Technical Development  
and Investment Director

\_\_\_\_\_ A.S. Shangin Date \_\_\_\_\_

OOO SVEZA Forest  
Sales and Marketing  
Director

\_\_\_\_\_ A.I. Immoreyev Date \_\_\_\_\_

OOO SVEZA Forest  
Head of Marketing Department

\_\_\_\_\_ Y.A. Ermakova Date \_\_\_\_\_

OAo Fanplit  
CEO

\_\_\_\_\_ B.V. Didenko Date \_\_\_\_\_

OAo UIFK  
CEO

\_\_\_\_\_ S.G. Sarson Date \_\_\_\_\_

Perm Plywood Mill LLC  
CEO

\_\_\_\_\_ M.V. Vyatkin Date \_\_\_\_\_

OAo VU FK Novator  
CEO

\_\_\_\_\_ A.B. Stepanov Date \_\_\_\_\_

OAo FANKOM Manturovo  
CEO

\_\_\_\_\_ D.L. Maltsev Date \_\_\_\_\_

OAo FANKOM Verhnaya Sinyachiha  
CEO

\_\_\_\_\_ I.V. Radchenko Date \_\_\_\_\_

## Preface

Development purposes and objectives as well as the use of corporate standards in Russia are stated by the Federal Law 184-FZ "On Technical Regulation" as of December 27, 2002.

Development and execution rules are stated by GOST R 1.0-2012 Standartization In the Russian Federation. Basic Provisions" and GOST R 1.4-2004 Standartization In the Russian Federation. Corporate Standards. Basic Provisions."

The standard is harmonized with GOST R 53920-2010 National standard "Laminated plywood. Specifications"

## Standard Info

1 DEVELOPED AND INTRODUCED by OAO Fanplit public company, plywood and particle board manufacturer, in replacement of TU 5512-007-00255177-01

2 APPROVED AND PUT INTO EFFECT by order of OAO Fanplit CEO dated \_\_\_\_\_, \_\_\_\_ Fanplit JSCFanplit JSC 20\_\_\_\_ # \_\_\_\_\_

3 APPROVED by OOO SVEZA Forest Technical Development and Investment Director A.S. Shangin \_\_\_\_\_, \_\_\_\_ 20 \_\_\_\_

4 EXPERT OPINION OBTAINED from Federal State-Funded Intstitution "The Kostroma Region State Center for Standartization, Metrology, and Testing" (FBU "Kostromskoy TsSM") as of July 04, 2014.

The standard hereby may only be used for work with the written consent of OAO Fanplit.

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# CORPORATE STANDARD

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## FILM FACED BIRCH PLYWOOD Specifications

Film Faced Birch Plywood  
Specifications

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Date introduced: \_\_\_\_\_, \_\_\_\_\_ 2014

### 1 SCOPE OF USE

The standard hereby covers waterproof birch plywood overlaid with thermosetting polymer film (hereafter 'plywood') intended for use in construction industry, automotive engineering, railway coach, container, and packaging manufacturing.

### 2 REGULATORY REFERENCES

The standard hereby includes regulatory reference 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 rulers. Specifications
- GOST 3749-77 Checking 90 degree C 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 requirements in testing
- GOST 9621-72 Laminated glued wood. Physical testing methods
- GOST 9622-87 Laminated glued wood. Methods for determination of ultimate strength and elasticity modulus in tension
- GOST 11358-89 Dial-type thickness gauges and dial-type wall thickness gauges graduated in 0.01 and 0.1 mm. Specifications
- GOST 14192-96 Cargo marking.
- GOST 18321-73 Statistical quality control. Item random sampling methods
- GOST 27678-88 Particle boards and plywood. Perforatory method for determining formaldehyde content
- GOST 30255-95 Furniture, timber and polymers. 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 R 1.0-2012 The State standartization system in the Russian Federation. Basic Provisions
- GOST R 1.4-2004 Standartization In the Russian Federation. Corporate Standards. Basic Provisions.
- GOST R 53920-2010 Laminated plywood. Specifications

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

### 3 Terms and Definitions

The standard hereby uses the following terms:

EXT (FSF)—plywood with waterproof glue joint for both interior and exterior use.

UNCOATED (UN).

### 4 CLASSIFICATION AND SIZES

4.1 Plywood is categorized as follows:

- according to grain direction of adjacent plies;
- into categories according to water resistance of the glue joint;
- by surface types according to the coating type and application method;
- into grades according to the surface appearance.

4.1.1 Plywood is classified by grain direction of its adjacent plies as follows:

- X – perpendicular grain directions;
- U – parallel grain directions;
- G – combined grain directions;

4.1.2 Plywood has grade EXT (FSF) according to its water resistance.

4.1.3 Plywood is classified by surface types, according to the coating type and application method;

- F – smooth surface;
- W – mesh surface;
- SP – surface for further painting;
- UN – uncoated surface;

Notes:

1. Surface types may be combined.
2. In orders or plywood during bundle marking, the uncoated surface should be marked with the same grade code as the face veneer under STO 00255177-001.

4.1.4 According to its appearance plywood is graded as follows: 1, 2, 3.

#### 4.2 Sizes

4.2.1 The length and the width must comply with the requirements specified in Table 1 below.

Table 1

In mm

Plywood sheets length (width)	Maximum 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

Notes:

1. It is allowed to produce plywood in other sizes by agreement with the customer.
2. The plywood sheet's length is measured along the grain of the face veneers.

4.2.2 Thickness and number of plies must comply with values specified in Table 2.

Table 2

In mm

Nominal plywood thickness	Number of plies	Maximum tolerance	Variation in thickness, mm
6	5	+0.4	0.6

		-0.5	
6.5	5	+0.4 -0.5	
8	6 and 7	+0.4 -0.5	
9	7	+0.4 -0.6	
10	7 and 8	+0.5 -0.6	
12	9	+0.5 -0.7	
15	11	+0.6 -0.8	
18	13	+0.7 -0.9	
21	15	0.0 -1.1	
24	17	0.0 -1.5	
27	19	0.0 -1.8	
30	21	0.0 -2.0	
35	25	0.0 -2.0	
40	28 and 29	+1.2 -1.2	
Note: It is allowed to produce plywood with other thicknesses and maximum tolerances by agreement with the customer.			

4.3 Plywood sheets must be cut square. Out-of-squareness must not exceed 1 mm per 1 mm of the sheet edge

4.4 Out-of-straightness must not exceed 1 mm per 1 mm of the sheet length.

4.5 Plywood marking must include the following information:

- Product description with timber species;
- Category;
- Grain direction of the adjacent layers;
- Surface type;
- Grade;
- Emission class;
- Dimensions;
- Film type;
- Indication of the standard hereby.

MARKING CODE EXAMPLE for EXT (FSF) birch plywood with smooth type surface (both sides), DB 120/120 film type, grade 1/1, E1 emission class, 2,440 mm long, 1,220 mm wide, 12 mm thick:

*Film faced birch plywood, X, Exterior, F/F, 1/1, E1, 2,440x1,220x12, DB 120/120  
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## 5 TECHNICAL SPECIFICATIONS

5.1 The following materials are used for plywood production:

- EXT general purpose plywood with birch face veneers manufactured under STO 00255177-001 corporate standard, sanded, graded WGE (III) or higher;
- Resin impregnated paper (hereafter 'film');
- Water-based acrylic paint to protect plywood edges from moisture penetration according to standards and technical documentation.

5.2 Plywood is produced in the following grades according to the quality of its surface appearance: 1/1, 1/2, 2/2, 3/3.

Plywood surface appearance must meet specifications listed in Appendix A.

5.3 Formaldehyde content in plywood and formaldehyde release into the room air must comply with the value specified in Table 3.

Table 3

Emission class	Formaldehyde content per 100 g of oven-dry weight (perforatory method), mg	Release of formaldehyde	
		Chamber method, mg/m <sup>3</sup> of air	Gas analysis method, mg/m <sup>2</sup>
E1	Up to and incl. 8.0	Up to 0.124	Up to and incl. 3.5, or less than 5.0 within 3 days after manufacture

5.4 Physical and mechanical performance of plywood must meet specifications under Tables 4 and 5.

Table 4

Parameter name	Thickness, mm	Physical and mechanical performance values
1 Moisture content, %	6–40	5–14
2 Ultimate static bending strength: —along the grain of face veneers, MPa, min —against the grain of face veneers, MPa, min	9–40	60 30
3 Modulus of elasticity in static bending: —along the grain, MPa, min —against grain, MPa, min	9–40	6,000 3,000
4 Ultimate tensile strength along the grain of face veneers, min MPa	6–6.5	30
5 Adhesion strength of coating to plywood	6–40	Coating must not delaminate at the crossing point of two cuts

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Table 4 — conclusion

Parameter name	Thickness, mm	Physical and mechanical performance values
6 Steam resistance	6–40	No swelling. Small loss of gloss. No blisters.
7 Sodium hydroxide (NaOH) resistance	6–40	Solution color after testing (NaOH) from light yellow to colorless



8 Cement resistance	6–40	No cement coloration after contact with plywood
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Note: Characteristics under items 4–8 are chosen by agreement with the customer.

Table 5

Average ultimate shear strength along the glueline, MPa	Destruction in wood, %
Over 0.2 up to and incl. 0.4	Over or equal to 80
Over 0.4 up to and incl. 0.6	Over or equal to 60
Over 0.6, but less than 1.0	Over or equal to 40
1.0 and more	-

Notes:

1 EXT (FSF) plywood is prepared to testing using one of the four following methods:

- boiling in water for 1 hour;
- soaking in water for 24 hours at 20±3°C, boiling in water for 6 hours;
- soaking in water for 24 hours at 20±3°C, boiling in water for 4 hours, drying in a ventilated cabinet for 16–20 hours, second boiling in water for 4 hours, cooling in water for 1 hour;
- soaking in water for 24 hours at 20±3°C, boiling for 72±1 hours, cooling in water for 1 hour;

Preparation method is chosen by agreement with the customer.

2 Percentage of destruction in wood is determined visually

3 Shear testing is performed in different glue lines by agreement with the customer

5.5 Plywood stock is taken in cubic meters. One sheet's volume is calculated without regard to rounding. The volume of assembled plywood stacks and batches are calculated to 0.001 m<sup>3</sup>. The area of one plywood sheet is calculated to 0.01 m<sup>2</sup>, of the sheets in a batch to 0.5 m<sup>2</sup>.

5.6 Each plywood sheet may be marked.

Marking is applied with indelible paint on the edge or face of each plywood sheet. For thicknesses below 10 mm, one mark is stamped each two or three sheets.

Marking includes the following information:

- Plywood category;
- Plywood grade;
- Manufacturer;
- Thickness and/or grader number;
- Certification info.

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5.7 Plywood stacking

Plywood should be sorted into separate stacks (400, 600, and 900 mm high) based on grading.

It is allowed to pack plywood into stacks of other heights by agreement with the customer.

5.8 Packaging and marking of ready plywood bundles

5.8.1 Plywood bundles should have proper packaging to ensure integrity and safety in transportation.

Various packaging types are allowed.

5.8.2 The packed bundles are marked with self-adhesive labels.

The writing is made in Russian and/or English on the two opposite and/or perpendicular side strips. The text content on the both strips is the same:

- Trademark;
- Manufacturer, manufacturer's address;
- Plywood manufacture governing document;
- Country of origin, contact details;

- Certification signs;
  - Product name;
  - Plywood dimensions and thickness;
  - Plywood category;
  - Plywood grade,
  - Surface type;
  - Film type;
  - Emission class;
  - Number of sheets in a bundle;
  - Plywood production date;
  - Production facility number;
  - Handling marks: KEEP DRY, USE NO HOOKS;
  - Bar code, if a data terminal (scanner) is available.
- Handling marks according to GOST 14192.

## 6 ACCEPTANCE RULES

6.1 Plywood is accepted in batches.

A batch is a certain number of plywood sheets sorted by grade, type, emission class, surface type, film type, and dimensions. A batch should come with a single document containing the following information:

- Trademark;
- Country of origin;
- Name and/or trademark of the manufacturing facility including its address;
- Plywood code;
- Batch size;
- Governing document the product complies with.

6.2 Plywood sheet quality and dimensions are controlled by sampling inspection. During this selective check, plywood sheets are sampled at random according to GOST 18321 in quantity specified by Table 6.

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Table 6

In sheets

Batch size	Controlled value by items			
	4.2; 4.3; 4.4		5.2	
	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

Note: Sample sizes for Table 4 items 4, 6, 7, and 8 are determined by agreement with the customer.

6.3 Ultimate shear strength along the glueline, ultimate static bending strength along and against the grain of face veneers, modulus of elasticity in static bending along and against the grain of face veneers, are checked at least once a month for each thickness.

Checking of each batch is allowed by agreement with the customer, for that purpose 0.1% of the batch's sheets are sampled (at least one sheet).

6.4 Formaldehyde content and release values are monitored once per 30 days.

To monitor formaldehyde content and emission, one plywood sheet is picked from a sample of any size. It is allowed to perform formaldehyde release monitoring once per 7 days, by agreement with the customer.

6.5 For plywood subject to acceptance it is allowed to apply physical testing and free formaldehyde content&emission testing values to the product manufactured during the same period.

6.6 A batch is considered to comply with the standard hereby and is accepted if the following conditions are met by samples:

—The number of substandard plywood sheets in terms of dimensions, out-of-squareness, out-of-straightness, and processing defects is less or equal to the acceptance number specified in Table 6;

—Properties comply with values specified in Tables 4 and 5;

—Formaldehyde content and emission meet the requirement stated in Table 3.

## **7 QUALITY CONTROL METHODS**

7.1 Sampling for physical performance testing is done according to GOST 9620 and 27678, [1], [5].

7.2 Plywood length and width are measured at two points parallel to the edges, at least 100 mm from edges using a metal tape according to GOST 7502 with a tolerance of 1 mm. The arithmetic mean value of the two measurements is considered the actual length (width) of the sheet.

7.3 Thickness is measured with a thickness gauge according to GOST 11358, or a micrometer graduated in 0.01 according to GOST 6507, at least 25 mm from edges, in the middle of each sheet's face.

The arithmetic mean value of the two measurements is considered the actual thickness of the sheet.

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

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7.4 Out-of-squareness in a plywood sheet is measured with an elbow according to GOST 3749. Out-of-squareness is defined by the maximum deviation of the sheet's edges from the surface using a metal elbow ruler according to GOST 427 with a tolerance of 1 mm.

7.5 Out-of-straightness of a plywood sheet's edges is defined by measuring the maximum gap between the sheet's edge and the edge of the metal ruler using a probe according to GOST 8925 with a tolerance of 0.2 mm.

7.6 Warping according to GOST 30427.

7.7 Moisture content according to GOST 9621.

7.8 Ultimate shear strength along the glueline according to [3].

7.9 Ultimate static bending strength and modulus of elasticity according to [4].

7.10 Ultimate tensile strength according to GOST 9622.

7.11 Processing defects are measured according to GOST 30427.

7.12 Adhesion strength of the film coating is tested according to GOST 14614 by cutting two lines crossing at 45 degrees on the plywood samples' film coating. Then the tested sample is visually checked.

7.13 Steam resistance according to Appendix B.

7.14 Sodium hydroxide (NaOH) resistance according to Appendix D.

7.15 Cement resistance according to Appenix E.

7.16 Formaldehyde content according to GOST 27678 (used as the reference method), formaldehyde emission according to GOST 30255, [1].

## **8 STORAGE AND TRANSPORTATION**

Plywood should be transported in closed vehicles according to the haulage rules applicable to the respective means of transport.

## 8.2 Plywood storage.

Plywood is stored packed in horizontally laid stacks on pallets or wooden pads inside closed buildings at temperatures from -40 to +50°C and relative humidity not exceeding 80%.

## 9 MANUFACTURER WARRANTY

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

EXT (FSF) grade plywood guaranteed shelf life is 5 years following the day of receipt by customer.

## 10 SAFETY AND ENVIRONMENTAL REQUIREMENTS

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

10.2 Plywood must be produced using materials and components allowed by the national sanitary and epidemiological inspection authorities.

10.3 Persons age 18 and older with a clean bill of health are only allowed to work in plywood production. Medical examinations are conducted according to the applicable instructions from the Ministry of Health of the Russian Federation.

10.4 People engaged in plywood manufacturing must be provided with personal protection equipment according to the applicable regulations under GOST 12.4.011.

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10.5 Specific activity of Cesium 137 in plywood must not exceed health standards stated by requirements under [9].

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

10.7 Plywood usually has a long service life, and there are a number of ways to recycle it. Plywood must be recycled according to the applicable local recycling laws and requirements.

## 11 OPERATIONAL GUIDELINES

11.1 Film faced birch plywood is intended for repeated use. Compliance with plywood use and storage rules extends its lifetime.

11.2 Film faced plywood should be transported in closed vehicles with weather protection. During transportation high humidity should be avoided to prevent edge swelling, sheet warping, strong indentation of packaging straps, or other loss of quality.

11.3 Insignificant variations in plywood thickness are allowed due to the humid air during transportation: on the periphery, up to 50 mm from the edge.

11.4 Proper storage should be provided for plywood panels intended for use in vehicles: indoors, weatherproof.

11.5 Plywood cutting into parts should be performed using band or circular saws. Sawing must be done properly to obtain clean cut. First, panels are sawed against the face grain, then along the grain. This method allows to avoid corner splitting and reduce the size and amount of shears on the face. When a circular saw is used we recommend cutting at a high speed and a low efficiency factor.

To prevent plywood from moisture pickup when it is sawed the edges should be always treated with special types of acrylate-based waterbourne paint.

11.6 All holes made during the installation work must be filled with acrylate-based waterbourne paint to prevent moisture ingress.

To get drilled holes smooth and clean use a bit that is sharp enough and has a cutting tool in front. Holes should be drilled from the face. You can avoid shears or splitting on the back side by using a pad sheet.

When nails are necessary, use drive screws or other special screws to prevent veneer splitting. The distance of 12–15 mm from the sheet's edge to the screw is considered appropriate.

11.7 When the work is finished the surface of plywood must be cleaned of concrete mix remainders.

11.8 When plywood is used as part of formwork for a long time moisture content in plywood sheets increases significantly, which reduces its strength performance. Therefore plywood should be dried. To avoid external deformation it is dried in a natural way.

11.9 Film faced plywood may have color variations between the film and the logo.

**APPENDIX A**  
(mandatory)

**Restrictions on defects by plywood grades**

Restrictions on defects by plywood grades are listed in Table A.1

Table A. 1

Defect	Restrictions on defects by grades		
	1	2	3
1. Telegraphing wood grain structure, sound knots, or inserts	Allowed		
2. Film delamination, tears, absence, shedding	Allowed along one edge up to 3 mm provided that the area is coated with moisture protective paint	Allowed up to 2% of the sheet's area provided that the defect is coated with moisture protective paint	Allowed
3. Temperature stain marks	Not allowed	Allowed if the film coating integrity is maintained	Allowed
4. Film overlaps (folds)	Allowed up to 10 mm wide, up to 500 mm long, 1 pc/m <sup>2</sup>	Allowed	
5. Film pieces sticking	Allowed up to 30x30 mm, 1 pc/m <sup>2</sup> or up 10x100 mm, 1 pc/m <sup>2</sup>	Allowed	
6a. Burnt film (burnouts) due to face veneer defects: shakes, damage, knot holes	Not allowed	Allowed	
6b. Burnt film (burnouts) due to face veneer defects: coarse peeling	Not allowed	Allowed	
6c. Burnt film (burnouts) due to face veneer defects: lines or stains due to sanding	Not allowed	Allowed up to 25% of the sheet's area	Allowed

7a. Core veneer defect traces: knot holes, other holes	Allowed as stains up to 25x25 in size, no more than 1 pc/m <sup>2</sup>	Allowed
7b. Core veneer defect traces: open split, shakes	Allowed up to 5 mm wide, up to 300 mm long, no more than 1 pc/rm	Allowed

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*Appendix A conclusion*

Defect	Restrictions on defects by grades		
	1	2	3
8. Trace of spliced or jointed veneer	Allowed with no coating damage	Allowed	
9. Press plate lines and stains	Allowed		
10. Film lines and stains	Allowed up to 15% of the sheet's area	Allowed	Allowed
11. Local blisters on plywood surface	Not allowed	Allowed up to 100 mm in diameter, max 1 pc/m <sup>2</sup>	Allowed
12. Veneer particles glued into the face veneer	Not allowed	Allowed	
13. Press plate imprints	Allowed up to 5% of the sheet's area	Allowed	
14. Indentation	Allowed up to 6 mm in diameter, max. 1 pc/m <sup>2</sup> provided that the film is fast to the plywood	Allowed up to 0.5 mm deep with no coating damage	Allowed
15. Scratches	Not allowed	Allowed with no coating damage	Allowed
16. Cutting defects, shears at the edge	Allowed up to 3 mm long provided that the area is coated with moisture protective paint	Allowed up to 10 mm long provided that the area is coated with moisture protective paint	Allowed
17. Paint drips	Allowed up to 5 mm wide,	Allowed	
18. Veneer shortage	Not allowed	Allowed along one edge, max. 5 mm deep	Allowed
19. Local core veneer delamination (hidden blister)	Not allowed		Allowed
20. Warping	Ignored in plywood up to and incl. 6.5 mm thick, allowed in plywood over 6.5 mm thick with max. deflection of 15 mm/m of the plywood sheet's diagonal length.		
21. Dimensional deviations	Dimensions according to items 4.2, 4.3, and 4.4		Allowed

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APPENDIX B  
(mandatory)

**Processing Defects Terms and Definitions**

Processing defects terms and definitions are listed in Table B.1

Table B.1

Processing Defect	Definition
Telegraphing wood grain structure, sound knots, or inserts	Contours of sound knots, wood grain structure, inserts on the surface of film faced birch plywood.
Film delamination, tears, absence, or shedding	Film faced birch plywood surface areas not covered with film
Temperature stain marks	Film discoloration (with or without coating damage) due to premature drying without pressure
Film overlaps (folds)	Local thickening due to film overlap on the plywood surface
Film pieces sticking	Glued pieces of film that stuck to the plywood surface during lamination
Burnt film (burnouts)	Film damage along the face veneer defects
Core veneer defect traces	Film damage along the core veneer defects
Press plate lines and stains	Lines or stains on the film faced plywood surface due to press plate contamination
Film lines and stains	Discolored areas on film faced plywood caused by volatile emissions during pressing
Local blisters on plywood surface	Partial film delamination from plywood surface
Veneer particles glued into the face veneer	Veneer particles glued into the face veneer before laminating
Press plate imprints	Blows caused by laminae press plate defect
Indentation	Local face veneer indentation with no coating damage
Scratches	Film faced plywood coating damage with a sharp object in the form of a long narrow recess or a local face veneer indenting with film damage.
Edge shears, cutting defects	Defects involving lack of film coating along the plywood sheet's edge.
Paint drips	Paint splashes on the plywood sheet's face
Veneer shortage	Defect involving a partial lack of core veneer, except for the front knots and cracks
Local core veneer delamination (hidden blister)	Delamination is separation of two adjacent veneers along the glue-line.

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APPENDIX B  
(mandatory)

**Steam resistance determination method**

A 500 ml flask with neck 60 mm in diameter is half filled with water and boiled.  
A plywood sample is put on top of the flask neck tightly and exposed to steam for 60 minutes.  
After exposure the sample is dried and estimated for damage on three-point scale:  
1—No swelling. Small loss of gloss. No blisters.

- 2—Small swelling all over the area. Loss of gloss. Small blisters.
- 3—Severe swelling. Severe loss of gloss. Severe blistering.

#### APPENDIX D (mandatory)

##### **Sodium hydroxide (NaOH) resistance determination method**

A glass cup about 50 ml is filled with 5% NaOH solution. A plywood sample is pressed on top tightly so that the distance between the cup's edge and the sample's edge is about 10 cm. Then the plywood sample is turned 180° together with the cup so that the solution dewes the surface, and left for 2 hours.

Sodium hydroxide resistance of plywood is estimated by changes in solution's color:

Intense yellow—the film is undercured.

Light yellow—normal film curing.

Colorless—full film curing.

#### APPENDIX E (mandatory)

##### **Cement resistance determination method**

Cement mixture is prepared as follows: cement 120 g, water 50 g.

Five 30 to 40 g cakes of cement are put on a 30x30 cm plywood sample.

In 24 hours, set cement cakes are removed from the plywood surface in and dried for 6 days.

On the seventh day, discoloration of the set cement is estimated on three-point scale:

1—No coloration.

2—Partial coloration on edges.

3—All edges are colored.

The fully cured plywood surface doesn't affect the surface of cement. A reddish hue means that the phenolic film is not fully cured.



## REFERENCES

- [1] EN 717-1-1995 Wood-based Panels. Determination of formaldehyde emission. Part 1. Determination of formaldehyde emission using test chamber  
EN 717-2-1995 Wood-based Panels. Determination of formaldehyde emission. Part 2. Determination of formaldehyde emission using gas analysis method
- [2] DIN EN 314-1 Plywood - Bonding quality - Part 1: Test methods
- [3] DIN EN 314-2 Plywood; bonding quality; part 2: requirements
- [4] EN 310-1993 Wood-based panels. Determination of modulus of elasticity in bending and of bending strength
- [5] EN 326-1 Wood-based Panels. Sampling and cutting of test pieces and inspection Part 1: Sampling and cutting of test pieces and expression of test results
- [6] GN 2.1.6.1338-03 Maximum admissible allowable concentrations in community air
- [7] GN 2.1.6.2309-07 Suggested no-adverse-response levels in community air Hygienic regulations
- [8] GN 2.1.6.2328-08 Supplement to GN 2.1.6.2309-07 Suggested no-adverse-response levels in community air. Hygienic regulations
- [9] Unified sanitary epidemiological and hygienic requirements for goods subject to sanitary and epidemiological control supervision approved by the Customs Union commission decision #299 as of 28.05.2010

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Developing company  
OAO Fanplit

Head of Developing company:  
OAO Fanplit  
Production Director

\_\_\_\_\_ B.V. Didenko

Development Lead:  
OAO Fanplit  
Production Director

\_\_\_\_\_ V.V. Tikhonov

Executed by:  
Head of Quality and  
Manufacturing&Process Control Department \_\_\_\_\_ I.A. Vinogradova