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## CARBAMIDE-MELAMINE-FORMALDEHYDE PLYWOOD FKM WITH INCREASED WATER RESISTANCE

TECHNICAL SPECIFICATIONS

TU U 20.2-30905968-002:2009

(First introduced)

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## 1 SCOPE OF APPLICATION

These technical specifications cover carbamide-melamine-formaldehyde plywood FKM with increased water resistance (hereinafter referred to as plywood) intended for manufacture of furniture and for use in other industries and construction applications.

The requirements of these technical specifications are mandatory.

The mandatory requirements for product quality aimed at ensuring the safety of life and health of people and environmental protection are stated in paragraphs 4.5, 4.6, Section 5.

These technical specifications must not be fully or partially reproduced, replicated and distributed without the permission of “Uniplyt” LLC, the owner of the property part of the technical specifications.

The owner shall verify the technical specifications regularly, at least once every five years after their implementation or their last revision, if there was no need to revise them before when adopting laws and regulations that regulate other requirements than those established in these technical specifications.

Example of identification when placing an order:

“Plywood FKM, carbamide-melamine-formaldehyde, with increased water resistance”.  
TU U 20.2-30905968-002:2009.

## 2 REGULATORY REFERENCES

DSTU 2296-93	UkrSEPRO certification system. Mark of conformity. Form, size, technical requirements and rules of application.
DSTU 3413-96	UkrSEPRO certification system. Procedure of conducting of product certification.
DSTU 4179-2003	Metal measuring tapes. Technical specifications (GOST 7502-98, MOD).
DSTU GOST 15.009:2009	Product development and launch system. Non-food consumer goods.
DSTU GOST 427:2009	Metal measuring scales. Technical specifications.
DSTU GOST 6507:2009	Micrometers. Technical specifications.
DSTU GOST 8925:2009	Flat clearance gauges for machine retaining devices. Design.

DSTU GOST 15846:2003	Production for transportation to the areas of Far North and similar regions. Packing, marking, transportation and storage.
GSTU 13-015-96	Face veneer. Technical specifications.
GOST 12.1.004-91	Occupational safety standards system. Fire safety. General requirements.
GOST 12.1.005-88	Occupational safety standards system. General sanitary and hygiene requirements for working zone air.
GOST 12.1.007-76	Occupational safety standards system. Noxious substances. Classification and safety requirements.
GOST 12.2.003-91	Occupational Safety Standards System. Industrial Equipment. General Safety Requirements.
GOST 12.3.002-75	Occupational safety standards system. Production Processes. General safety requirements.
GOST 17.2.3.02-78	Nature protection. Atmosphere. Regulations for establishing permissible emissions of noxious pollutants from industrial enterprises.
GOST 99-96	Rotary cut veneer. Technical specifications.
GOST 2977-82	Sliced veneer. Technical specifications
GOST 9078-84	Flat pallets. General technical specifications
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 9622-87	Laminated glued wood. Methods for determination of ultimate strength and modulus of elasticity in tension.
GOST 9624-93	Laminated glued wood method for determination of shearing strength.
GOST 9625-87	Laminated glued wood. Method for determination of strength and elasticity modulus in static bending.

GOST 10354-82	Polyethylene film. Technical specifications.
GOST 11358-89	Dial-type thickness gauges and dial type wall thickness gauges graduated in 0,01 and 0,1 mm. Technical specifications.
GOST 14192-96	Cargo marking.
GOST 15612-85	Products of wood and wooden materials. Methods for determining surface roughness parameters.
GOST 18321-73	Statistical quality control. Methods of random sampling of single-piece products.
GOST 24297-87	Incoming inspection of products. General provisions.
GOST 26663-85	Transportation blocks. Packing on flat palletes. General technical requirements.
GOST 27678-88	Wood particle boards. Perforatory method for determining formaldehyde content.
GOST 30427-96	Plywood for general use. Classification of veneer surfaces by appearance.
State Sanitary Rules and Standards DsanPiN 2.2.7.029-99	State Sanitary Rules and Standards. "Hygienic Requirements of Industrial Waste Management and Definition of their Class of Hazard to Health of Population", Resolution No. 29 of the Chief State Medical Officer of Ukraine from 01-07-99.
State Sanitary Rules and Standards DSanPiN 8.8.1.2.3.4-000-2001	"Permissible doses, concentrations, quantities and levels of pesticide content in agricultural raw materials, foodstuffs, air in working areas, ambient air, water in water reservoirs, soil", approved by the Ministry of Healthcare of Ukraine on 20-09-2001 under No. 137.
GN 6.6.1-120-2005	State Hygienic Standards "Hygienic standards for specific activity of radionuclides (137) and (90) in wood and wood products", Order No. 573 from 31-10-2005 of the Ministry of Healthcare of Ukraine.
Sanitary Rules and Standards SanPiN 4630-88	Sanitary rules and standards for surface water protection from pollution, approved by the Ministry of Healthcare of USSR on 04-07-88.
Sanitary Rules and Standards SanPiN 42-128-4690-88	Sanitary rules and standards for keeping territory of populated areas, approved by the Ministry of Healthcare of USSR in 1988.

State Sanitary standards DSN 3.3.6.037-99 SniP 2.04.05-91	State sanitary standards for industrial noise, ultrasonic and infrasonic sound.
State Sanitary standards DSN 3.3.6.039-99	State sanitary standards for industrial, general and local vibration.
State Sanitary standards DSN 3.3.6.042-99	State sanitary standards for microclimate of production facilities.
Construction Standards and Regulations SniP 2.04.05-91	Heating ventilation and air conditioning.
State Construction Standards DBN B.2.5-28-2006	Natural and artificial lighting.
State Sanitary Regulations DSP 201-97	State Sanitary Regulations for protection of atmospheric air of populated areas.
Order No. 246 of the Ministry of Healthcare of Ukraine from 21-05-2007 Order No. 280 of the Ministry of Healthcare of Ukraine from 23-07-2002	“On approval of the medical examinations of employees of certain categories”, Order No. 246 of the Ministry of Healthcare of Ukraine from 21-05-2007 concerning the organization of compulsory preventive medical examinations of personnel of certain professions, industries and organizations whose activities are tied up with public service and can lead to the spread of infectious diseases.

### 3 CLASSIFICATION AND DIMENSIONS

3.1 Plywood is subdivided into grades based on the surface appearance, and into sanded or non-sanded based on the surface treatment.

3.1.1 Plywood is subdivided into 5 grades based on the appearance of the face layers: E (Elite), I, II, III and IV.

The matching between the designations of the grades of plywood face layers specified in these technical specifications, **GOST 3916.1-96**, **GOST 10.55-71** and **GOST 3916.1-89** is given in Appendix A.

3.1.2 Based on the surface machining plywood is subdivided into:

- Non-sanded (NS)
- Sanded on one side (S1)
- Sanded on both sides (S2)

3.2 Dimensions.

3.2.1 The length and width of plywood sheets shall comply with the requirements specified in **Table 1**.

Table 1 – Length and width of plywood sheets

Length and width of plywood sheets, mm	Tolerance, mm
1200, 1220, 1250	± 3.0
1500, 1525, 1800, 1830	± 4.0
2100, 2135, 2440, 2500	± 4.0
2700, 2745, 3050, 3600, 3660	± 5.0

Note: It is allowed to produce plywood of other dimensions according to the terms of an agreement (contract).

3.2.2 The thickness of plywood and number of plies in plywood shall comply with the requirements specified in Table 2.

Table 2 – Thickness of plywood and number of plies in plywood

Nominal thickness of plywood, mm	Number of plies in plywood, min.	Sanded plywood		Non-sanded plywood	
		Tolerance, mm	Variation in thickness, mm	Tolerance, mm	Variation in thickness, mm
3.0	3	+0.3 -0.4	0.6	+0.4 -0.3	0.6
4.0	3	+0.3 -0.5		+0.8 -0.4	1.0
6.5	5	+0.4 -0.5		+0.9 -0.4	
9.0	7	+0.4 -0.6		+1.0 -0.5	
12.0	9	+0.5 -0.7		+1.1 -0.6	
15.0	11	+0.6 -0.8		+1.2 -0.7	1.5
18.0	13	+0.7 -0.9		+1.3 -0.8	
21.0	15	+0.8 -1.0		+1.4 -0.9	
24.0	17	+0.9 -1.1		+1.5 -1.0	

Nominal thickness of plywood, mm	Number of plies in plywood, min.	Sanded plywood		Non-sanded plywood	
		Tolerance, mm	Variation in thickness, mm	Tolerance, mm	Variation in thickness, mm
27.0	19	+1.0 -1.2	1.0	+1.6 -1.1	2.0
30.0	21	+1.1 -1.3		+1.7 -1.2	

Note: It is allowed to produce plywood of other thickness and number of plies according to the terms of an agreement (contract). Then the tolerance may be determined by the following formulae:

- for sanded plywood
  - + $(0.2+0.03 Sp)$ , (1)
  - $(0.4+0.03 Sp)$ , (2)
- for non-sanded plywood
  - + $(0.8+0.03 Sp)$ , (3)
  - $(0.3+0.03 Sp)$ , (4)

where Sp is the nominal plywood thickness

3.2.3 Plywood sheets shall be cut at the right angle. The obliquity shall not exceed 2 mm per 1 m of the length of the sheet edge.

3.2.4 The deviation from the straightness of the edges shall not exceed 2 mm per 1 m of the length of the sheet.

3.3 The identification mark of the plywood shall include as follows:

- Product name
- Species of wood of the face and core layers
- Combination of grades of veneer of the face layers
- Formaldehyde emission class
- Type of surface treatment
- Dimensions
- Identification of this standard

Below is given an example of identification for birch plywood with core layers of birch veneer with a combination of face veneer grades I/III, emission class of E1, sanded on both sides, 2440 mm long, 1525 mm wide and 9 mm thick:

Plywood birch/birch, FKM, carbamide-melamine-formaldehyde, with increased water resistance, I/III, E1, S2, 2440 x 1525 x 9, TU U 20.2-30905968-002:2009.



## 4 TECHNICAL REQUIREMENTS

4.1 Plywood shall comply with the requirements of these technical specifications, and shall be produced according to the process procedure or instruction in compliance with the applicable sanitary regulations for companies of the specified profile.

The production launch shall be made according to DSTU GOST 15.009.

### 4.2 Requirements for raw materials, materials, purchased finished products

4.2.1 The following raw materials and materials shall be used in the manufacture of plywood:

- Face veneer according to GSTU 13-015;
- Rotary-cut veneer according to GOST 99;
- Sliced veneer according to GOST 2977;
- Carbamide-melamine-formaldehyde resins according to the applicable documents upon availability of the quality certificate and approval for use issued by the central executive authority in the field of health care;
- Melamine and carbamide-melamine resins according to the applicable documents upon availability of the quality certificate and approval for use issued by the central executive authority in the field of health care;
- Pallets according to GOST 9078;
- Polyethylene film according to GOST 10354;
- Transportation blocks according to GOST 26663.

4.2.2 It is allowed to use similar materials upon availability of the quality certificate and approval for use issued by the central executive authority in the field of health care.

### 4.3 Characteristics

4.3.1 Veneer of hardwood species such as birch, alder, maple, beech, aspen, poplar, lime shall be used to produce plywood.

Plywood shall be considered to be produced of the species of wood used for making its face layers.

Plywood produced of one or various species of wood shall be subdivided respectively into homogeneous and composite.

If the number of veneer plies is even, two central plies shall have a parallel direction of fibers. Veneer plies located symmetrically within the thickness of plywood shall be of the same species of wood and thickness.

The thickness of the veneer used for face layers of plywood shall not exceed 3.5 mm, for core layers shall not exceed 4 mm.

4.3.2 Flaws in wood and manufacturing defects exceeding the limits stated in Table 3 shall be not allowed in face layers of plywood.

4.3.3 Flaws in wood and manufacturing defects shall be allowed in core layers of plywood provided that they do not affect its quality and dimensions, the requirements for which are specified in this standard.

4.3.4 The maximum number of allowable flaws in wood and manufacturing defects on the surface of plywood with face layers of veneer of specified grades is given in Table 4.

4.3.5 The combination of grades of veneer of face layers shall comply with GOST 30427.

4.3.6 For plywood up to 1525 mm wide the outer layer of grade E may be composed out of two strips of veneer with joints in the center of the sheet. For plywood of 1525 mm wide the outer layer of grade E may be composed out of three strips of veneer of equal width.

Table 3 – Standard limitations for flaws in wood and manufacturing defects

Flaws in wood and manufacturing defects according to GOST 30427	Plywood with face layers of veneer of grade				
	E	I	II	III	IV
1 Pin knots	Not allowed	Max. 3 pcs. per 1 sq. m of the sheet surface	Allowed		
2 Sound intergrown knots	Not allowed	Allowed of max. 15 mm in diam., max. 5 pcs. in number per 1 sq.m, with shakes max. 0.5 mm wide	Allowed of max. 25 mm in diam., max. 10 pcs. in number per 1 sq.m, with shakes max. 1.0 mm wide	Allowed with shakes max. 1.5 mm wide	Allowed
3 Partially intergrown, not intergrown, loose knots, knot holes, worm holes	Not allowed	Allowed of max. 6 mm in diam., max. 3 pcs. in number per 1 sq.m of the sheet surface	Allowed of max. 6 mm in diam., max. 6 pcs. in number per 1 sq.m of the sheet surface,	Allowed of max. 6 mm in diam., max. 10 pcs. in number per 1 sq.m of the sheet surface	Allowed of max. 40 mm in diam., no limit in number per 1 sq.m of the sheet surface
4 Close shakes	Not allowed	Allowed of max. 200 mm in length, max. 2 pcs. in number per 1 m of the sheet width		Allowed	
5 Open shakes	Not allowed		Allowed of max. 200 mm in length, of max. 2 mm in width, max. 2 pcs. in number per 1 m of the sheet width If using wood putty	Allowed of max. 300 mm in length, of max. 2 mm in width, max. 2 pcs. in number per 1 m of the sheet width Allowed of max. 600 mm in length, of max. 5 mm in width if using wood putty	Allowed of no limit in length, of max. 10 mm in width, no limit in number per 1 m of the sheet width

Flaws in wood and manufacturing defects according to GOST 30427	Plywood with face layers of veneer of grade				
	E	I	II	III	IV
6 Light ingrown bark	Not allowed	Allowed			
7 Dark ingrown bark	Not allowed		Allowed in total number as per item 2 of this table		Allowed
8 Deviation in wood structure	Allowed very insignificant of incidental character, except for dark eyes	Allowed			
9 Sound colour stain	Not allowed	Allowed, max. 5% of the sheet surface	Allowed		
10 Unsound colour stain	Not allowed				Allowed
11 Rot of wood	Not allowed				
12 Pinholes	Not allowed	Allowed in total number as per item 3 of this table			
13 Overlaps in face layers	Not allowed		Allowed of max. 100 mm in length, max. 1 pce. in number per 1 m of the sheet width	Allowed of max. 200 mm in length, max. 2 pcs. in number per 1 m of the sheet width	Allowed
14 Deficiency in veneer, defects of sheet edges due to sanding and cutting	Not allowed	Allowed of max. 2 mm in width	Allowed of max. 4 mm in width	Allowed of max. 4 mm in width	Allowed of max. 5 mm in width
15 Presence of glue tape	Not allowed		Allowed for non-sanded plywood		
16 Glue bleed through	Not allowed		Allowed, max. 2% of the sheet surface	Allowed, max. 5% of the sheet surface	Allowed
17 Scratches	Not allowed		Allowed		
18 Dents, imprints, combs	Not allowed		Allowed if the depth (height) is within the thickness tolerance range		Allowed
19 Torn grain	Not allowed		Allowed, max. 5% of the sheet surface	Allowed, max. 15% of the sheet surface	Allowed
20 Oversanding	Not allowed				Allowed
21 Warping	It is not taken into account if using plywood up to 6.5 mm thick. If using plywood 6.5 mm thick and more, it is allowed with a sag of max. 15 mm per 1 m of the length of the plywood sheet diagonal.				
22 Metal inclusions	Not allowed			Staples of nonferrous metal are allowed	

Flaws in wood and manufacturing defects according to GOST 30427	Plywood with face layers of veneer of grade				
	E	I	II	III	IV
23 Joint gap	Not allowed		Allowed of max. 1 mm in width, max. 1 pce. in number per 1 m of the sheet width	Allowed of max. 1 mm in width, max. 2 pce. in number per 1 m of the sheet width	Allowed
24 Ply separation, bubbles, bark	Not allowed				
25 Wavy grain (for sanded plywood), rough saw cut, ripple marks	Not allowed			Allowed	
26 Surface roughness	According to GOST 7016 roughness ( $R_m$ ) is max. 100 $\mu\text{m}$ for sanded plywood, max.200 $\mu\text{m}$ for non-sanded plywood				
27 Wooden plugs	Not allowed		Allowed for patching, max. 8 pcs. in number per 1 sq.m of sheet	Allowed for patching, no limit in number per 1 sq.m of sheet	
28 Overlapped plugs	Not allowed		Allowed, max. 2 pcs. in number per 1 sq.m of sheet	Allowed	
<b>Notes:</b>					
1. The manufacturing defect "Deficiency in veneer" refers both to outer and core layers of plywood.					
2. Flaws in wood and manufacturing defects which are not stated in Table 3 are not allowed.					

Table 4 – Maximum number of allowed flaws and defects

Grade of veneer of the plywood face layers	Maximum number of allowed flaws in wood and manufacturing defects
E	No visible flaws in wood and manufacturing defects
I	3
II	6
III	9
IV	Flaws in wood and manufacturing defects are not limited in number. Dimensions are limited according to items 2, 5, 11, 12, 14, 24 of Table 3.

The outer layers of grades I and II are allowed to be composed out of unlimited number of veneer strips.

As for grades E, I and II, the joints of veneer shall be parallel to the edge of the sheet panel and veneer strips shall be of matching colour.

4.3.7 The veneer patches shall be even with the surface, be firmly bonded and match in colour and direction of grain with the species of wood of the plywood face layer. As for grades I and II, the veneer patches shall match in colour of wood.

4.4 The physical and mechanical properties of plywood are given in Table 5.

Table 5 – Physical and mechanical properties of plywood

Parameter	Thickness, mm	Standard for plywood with core layers of veneer of species of wood as follows			Inspection procedure
		birch	alder, beech, maple	lime, aspen, poplar	
1 Moisture content, %	3-30	5-10			According to GOST 9621
2 Shearing strength along the glue line after boiling in water for 1 hour, MPa, min.	3-30	1.5	1.2	0.6	According to GOST 9624
3 Static bending strength along the grain of the outer layers, MPa, min.	9-30	60.0	50.0	30.0	According to GOST 9625
4 Tensile strength along the grain, MPa, min.	3-6.5	40.0			According to GOST 9622
Note: It is allowed to use birch plywood with shearing strength along the glue line of 1.2 MPa according to the terms of an agreement (contract).					

4.5 The contents of radionuclides in plywood shall comply with the requirements of GN 6.6.1-120.

4.6 The contents of formaldehyde in plywood depending on the emission class shall comply with the requirements specified in Table 6.

Table 6 – Formaldehyde content in plywood

Emission class	Formaldehyde content per 100 g of absolutely dry weight of plywood, mg	Inspection procedure
E 1	Up to 10.0 inclusive	According to GOST 27678
E 2	From 10.0 to 30.0 inclusive	

4.7 Plywood shall be measured in square and (or) cubic meters. The volume of a sheet of plywood shall be measured accurate to 0.00001 cub. m. The volume of a batch of plywood shall be measured accurate to 0.5 cub. m. The area of a sheet of plywood shall be measured accurate to 0.01 sq. m. The area of sheets in a batch shall be measured accurate to 0.5 sq. m.

4.8 Marking

4.8.1 The marking shall be applied using any method that does not result in loss of information.

4.8.2 A sheet of plywood shall contain the data as follows:

- Name of plywood;
- Grade of plywood;
- Sorter's number.

4.8.3 A pack of plywood shall contain the data as follows:

- Name of the manufacturing country;
- Name of the manufacturer, its address, telephone number, trade mark (if any);
- Identification mark of plywood;
- Volume or area of sheets of plywood in a pack;
- Date of manufacture and shelf life;
- Storage conditions;
- Note of certification as per DSTU 2296 (if any);

4.8.4 The transport marking shall comply with GOST 14192.

4.8.5 The marking shall be made in the Ukrainian language when delivered within the country, and in the language specified in the agreement (contract) when delivered abroad.

#### 4.9 Packaging

4.9.1 Plywood shall be packed in packs weighting maximum 1500 kg each separately by species of wood, grades, emission classes, types of surface treatment and dimensions.

4.9.2 As may be agreed plywood can be packed in packs of other weights according to the agreement (contract).

4.9.3 The packaging and packing of plywood to be shipped to the areas of the Far North and remote areas shall comply with DSTU GOST 15846.

4.9.4 The packs shall be stacked on pallets according to GOST 9078 and GOST 26663.

4.9.5 Using other packing materials for packing plywood shall not be a cause for rejection upon availability of the approval for use issued by the central executive authority in the field of health care and provided that these packing materials ensure the preservation of plywood in the packing when being transported and stored.

4.9.6 As may be agreed with the customer it is allowed to use other types of packaging ensuring the preservation of plywood in compliance with the applicable regulatory documents.

## 5 SAFETY REQUIREMENTS

5.1 Plywood is safe for life and health of people in the process of its use, transportation and storage under the conditions provided by these technical specifications.

5.2 The content of formaldehyde in plywood depending on the emission class shall comply with the standards stated in Table 6.

5.3 Only persons over 18 years who have completed safety and fire safety training shall be allowed to work in the manufacture of plywood.

5.4 The surface temperature of the equipment shall not exceed 70°C.

5.5 The processing equipment shall comply with the requirements of GOST 12.2.003.

5.6 The processing procedure shall be conducted according to GOST 12.3.002.

5.7 The requirements for fire protection shall comply with GOST 12.1.004.

5.8 The air within the working area shall comply with the requirements of GOST 12.1.005, GOST 12.1.007.

5.9 The workers shall periodically undergo medical examinations according to Order No.246 and Order No.280 of the Ministry of Healthcare of Ukraine.

5.10 The microclimate within the production facilities shall comply with DSN 3.3.6.042.

5.11 The noise level in the workplaces shall comply with DSN 3.3.6.037.

5.12 The vibration level in the workplaces shall comply with DSN 3.3.6.039.

5.13 The illumination level in the workplace shall comply with DNB B.2.5-28.

5.14 The premises shall be equipped with ventilation according to SNiP 2.04.05.

5.15 The workers shall be provided with clothes according to the industry standards.

## **6 ENVIRONMENTAL REQUIREMENTS, DISPOSAL**

6.1 Wastewater during the manufacture of plywood shall be cleaned and comply with the requirements of SanPiN 4630.

6.2 The control of emissions of maximum permissible levels of harmful substances in the atmosphere shall comply with the requirements of GOST 17.2.3.02 and DSP 201.

6.3 The soil protection from pollution of household and industrial waste shall comply with the requirements of SanPiN 42-128-4690.

6.4 The handling with industrial waste shall comply with DSanPiN 2.2.7.029.

6.5 Plywood which does not meet these technical specifications shall be returned to the manufacturing company and disposed of according to the process instruction of the manufacturing company approved in due order by the head of the company and agreed with the appropriate services. Production waste and rejected products shall be subject to recycling.

## **7 ACCEPTANCE RULES**

7.1 Plywood shall be accepted in lots. A lot is a number of products made from homogeneous in terms of quality raw materials, of the same species of wood, grade, emission class, type of surface treatment, dimensions and accompanied by a document of quality:

7.2 A document of quality shall contain the data as follows:

- Name of the manufacturing country;
- Name of the manufacturing company, its address, telephone number, trade mark (if any);
- Identification mark of plywood;
- Serial number of the document of quality;
- Volume or area of sheets of plywood in a pack;
- Date of manufacture and shelf life;
- Lot number (if any);
- Storage conditions;
- Manufacturer's declaration of conformity of the product to the requirements of the technical specifications;
- Identification of the technical specifications;
- Note of certification as per DSTU 2296 (if any);

The original certificate of quality shall be stored in the dispatch service of the manufacturing company.

7.3 The raw materials to be used shall be inspected by means of the incoming inspection. The incoming inspection shall be carried out by analyzing and verifying the supporting documents for raw materials or by conducting tests if needed.

The incoming inspection for materials to be used in the manufacture of plywood shall be carried out according to GOST 24297.



7.4 Sampling inspection, periodic and certification (in case of certification) tests shall be conducted to determine the compliance of plywood with the requirements of these technical specifications.

7.5 The sampling inspection shall be conducted by the technical inspection department of the manufacturing company or any other inspection body of the manufacturing company according to the company's organizational structure.

7.6 The quality and dimensions of sheets of plywood shall be subject to sampling inspection. According to the terms of an agreement (contract) it is allowed to inspect every sheet of plywood.

When conducting sampling inspection, sheets of plywood shall be selected at random according to GOST 18321 in the amounts specified in Table 7.

Table 7 – Amounts of selected sheets of plywood

Lot quantity, pcs. of sheets of plywood	Control value by items			
	Sample size	Acceptance number	Sample size	Acceptance number
Up to 500	8	1	13	1
From 500 to 1200	13	1	20	2
From 1201 to 3200	13	1	32	3
From 3201 to 10000	20	2	32	3

7.7 Shearing, tensile and static bending strengths shall be checked for plywood of every thickness and number of plies in plywood at least once a month. According to the terms of an agreement (contract) for a lot it is allowed to sample 0.1% of sheets from the lot, but at least 1 sheet.

7.8 The formaldehyde content value shall be checked every 30 days. According to the terms of an agreement (contract) it is allowed to check this value every 7 days.

7.9 The lot is considered to be consistent with the requirements of these technical specifications, if the sampling inspection confirms that:

- The number of sheets of plywood which do not meet these technical specification in terms of dimensions, obliquity, straightness, flaws in wood and manufacturing defects is less or equal to the acceptance number specified in Table 7;
- All sheets of plywood have no bubbles, ply separation or barks;
- The formaldehyde content meets the standards specified in Table 6.

In case of unsatisfactory test results the acceptance and shipment of plywood shall be suspended, analysis shall be conducted and causes of the identified discrepancies shall be removed. The acceptance and shipment shall be resumed after receiving positive test results.

7.10 The certification testing shall be conducted in the order prescribed in the UkrSEPRO (National certification body of Ukraine) system according to DSTU 3413 (in case of certification).

## **8 INSPECTION METHODS**

8.1 The sampling for physical and mechanical testing shall be carried out according to GOST 9620, for evaluation of formaldehyde content shall be carried out according to GOST 27678.

8.2 The length and width of plywood shall be measured in two points in parallel to the edges at a distance of at least 100 mm from the edge using a metal tape with an accuracy of 1 mm according to DSTU 4179. The arithmetic mean value of the results of two measurements shall be taken as the actual length (width) of the sheet.

8.3 The thickness shall be measured at a distance of at least 25 mm from the edges and in the middle of each sheet using a thickness gauge according to GOST 11358 or a micrometer with a scale division of max. 0.1 mm according to DSTU GOST 6507.

The arithmetic mean value of the results of four measurements shall be taken as the actual thickness of the sheet.

The thickness variation of a sheet of plywood shall be determined as a difference between the maximum and minimum thicknesses of these 4 measurements.

8.4 The moisture content shall be determined according to GOST 9621.

8.5 The shearing strength along the glue line shall be determined according to GOST 9624.

8.6 The static bending strength shall be determined according to GOST 9625.

8.7 The tensile strength shall be determined according to GOST 9622.

8.8 The formaldehyde content level shall be determined according to GOST 27678.

8.9 The surface roughness shall be determined according to GOST 15612.

8.10 Flaws in wood and manufacturing defects shall be measured according to GOST 30427.

8.11 The deviation from the straightness of the edges of a sheet of plywood shall be determined by measurements of the maximum gap between the edge of the sheet and edge of the metal ruler according to DSTU GOST 427 using a filler gauge with an accuracy of 0.2 mm according to DSTU GOST 8925.

8.12 The obliquity level shall be determined according to GOST 30427.

8.13 The radionuclides content level shall be determined according to the specific methods to be provided for devices and GN 6.6.1-120.

## **9 TRANSPORTATION AND STORAGE**

9.1 Plywood shall be transported using all means of transport according to the shipping rules effective for the available means of transport.

9.2 The transportation and storage of plywood to be shipped to the areas of the Far North and remote **areas shall comply with DSTU GOST 15846.**

9.3 Plywood shall be stored in packs horizontally stacked on pallets according to GOST 9078 or wooden pads in the closed storage premises where plywood is prevented from deterioration at a temperature from -40°C to +50°C and relative air humidity of max. 80%.

The packaging shall be carried out according to GOST 26663 and DSTU GOST 15846.

9.4 When being transported, loaded and unloaded plywood shall be protected from mechanical damage.

## **10 TERMS OF USE**

Plywood shall be used directly in premises with high humidity or for manufacturing products to be used under high humidity.

## **11 MANUFACTURER'S WARRANTY**

11.1 The manufacturer guarantees compliance of plywood with these technical specifications subject to the conditions of storage and transportation specified in Section 9.

11.2 The guaranteed storage life of plywood is three years from the date of manufacture.

11.3 The guaranteed storage life of plywood can be extended provided that it meets the requirements of these technical specifications.

APPENDIX A  
(for reference)

Matching between the designations of the grades of plywood outer layers according to these technical specifications, GOST 3916.1-96, GOST 10.55-71 and GOST 3916.1-89

Grade			
According to these technical specifications	According to GOST 3916.1-96	According to GOST 10.55-71	According to GOST 3916.1-89
E	E	-	A
I	I	B	AB
II	II	BB	B
III	III	CP	BB
IV	IV	C	C

**12 REVISION RECORD SHEET**

Shift No.	Number of Sheets				Total sheets after introduction of modifications	Information on modifications (supporting letter No.)	Signature of the person responsible for introducing a modification	Name of this person and date of modification
	replaced	added	deleted	modified				