

ENAMELS PF-223. SPECIFICATIONS

GOST 14923-73

SUPERSEDES GOST 14923-69

SHEET 1 OF 11

This standard pertains to enamels PF-223 of different colours, which are suspensions of pigments in pentaphthalic varnish with the addition of drier and solvents.

Enamels are meant for painting metallic surfaces and wooden surfaces, used indoors.

The enamel film is resistant to change in temperature from minus 40 to plus 60°C.

Enamels are applied on the surface (on primer or without it) by means of pneumatic, spraying without using air, spraying in electrostatic field and with a brush.

1. TECHNICAL REQUIREMENTS

1.1. Enamels PF-223 should be produced in conformity with the requirements of this standard as per the compounding data and technological rules, approved in specified order.

1.2. Enamels PF-223 of the following colours should be produced :

white-1, white-2, yellow, red, brown, bright light blue, light blue, bright greyish-blue, blue, green, khaki, dark green, dark grey, greyish-green, black.

Former designations of enamel colours are given in reference appendix.

1.3. Before use, the enamels are diluted upto working viscosity with white spirit (GOST 3134-78), xylene (GOST 9049-70 or GOST 9410-71), solvent (GOST 1928-67 or GOST 10214-78) or a mixture of the given solvents in ratio 1:1.

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While painting the articles by spraying in electric field, the enamel is diluted with diluent RE-4V (GOST 18187-72).

1.4. As regards physico-chemical properties, enamels PF-223 should meet the norms and requirements, given in table-1.

Table : 1

Properties	Norms	Test methods
1. Colour	It should be within the limits of permissible deviations, determined by specimens of colour card Index of colour masters or approved colour specimens	As per point 3.3.
Yellow	204, 206	
red	11, 19	
brown	612, 616	
bright light-blue	952, 953	
light blue	414, 415	
bright greyish-blue	342, 343	
blue	440, 441	
green	301, 303	
khaki	741, 761	
dark green	321, 327	
dark-grey	812, 813	
greyish green	851, 852	
black	As per approved specimen	
white-1, white-2	Within the limits of permissible deviations of approved specimens of colour	
2. Appearance of film	After drying, the enamel film should be smooth, homogeneous, without pock marks, wrinkles and foreign matter. Insignificant "shagreen" is allowed.	As per point 3.3
3. Percentage lustre of film, not less than:		To GOST 296-60.

Properties	Norms	Test methods
9. Bending, mm, not above	1	To GOST 6806-73 and point 3.7 of this standard.
10. Impact strength of film, joules (kg.cm), not less than	5(50)	To GOST 4765-73 on the apparatus U-1A.
11. Hardness of film as per pendulum apparatus M-3, in conventional units, not less than, for enamels:		To GOST 5233-67
red, black, blue	0.2	
the remaining colours	0.3	
12. Resistance of film/the action of water at $20 \pm 2^\circ\text{C}$, in hours, not less than	3	To GOST 21065-75 and point 3.8 of this standard.
13. Resistance of film to the action of mineral oil at $20 \pm 2^\circ\text{C}$, in hours, not less than	24	As per GOST 21064-75 and point 3.9 of this standard.
14. Resistance of film to the action of benzine at $20 \pm 2^\circ\text{C}$, in hours, not less than	6	To GOST 21064-75 and point 3.10 of this standard.

Note : Increase in the norms of apparent viscosity of enamels, during storage, is allowed if the enamels do correspond to the requirements of this standard when they are diluted with solvent in quantity not above 20% (of the enamel weight).

2. ACCEPTANCE RULES

2.1. Acceptance rules-to GOST 9980-75, section 1. The quantity of enamel of a single colour, obtained in a single technological process and furnished with a single quality certificate, is taken as a batch.

3. TEST METHODS

3.1. Sampling - to GOST 9980-75, section 2.

3.2. Preparation for the test.

Plates for applying the enamels are prepared as per GOST 8832-76, section 3.

Properties	Norms	Test methods
for white-2	-	
for greyish-green and dark grey	35	
for remaining colours	40	
4. Apparent viscosity of enamel by viscosimeter V3-4 at 20±0.5°C, in sec:		To GOST 8420-74.
black	50-100	
the remaining colours	70-120	
5. Content of volatile substances (in % by weight) for enamels:		To GOST 17537-72 and point 3.4 of this standard.
white-1, white-2, brown, bright-light blue, bright		
-greyish-blue, khaki, dark		
green, dark grey	60-69	
yellow, green and light blue	56-65	
red, blue	50-58	
black	44-51	
6. Covering power of dried film, gm/m ² , maximum, for enamels:		To GOST 8784-75 and point 3.5 of this standard.
white-1	150	
white-2	210	
yellow	130	
red	110	
brown	50	
bright light-blue	75	
light blue	75	
bright greyish-blue	85	
blue	60	
green	60	
khaki	50	
dark-green	50	
dark-grey	75	
greyish-green	75	
black	20	
7. Degree of grind, microns, maximum:		To GOST 6580-74.
black	20	
the remaining colours	25	
8. Drying period upto degree 3 at 20±2°C, in hrs, not above, for enamels:		To GOST 19007-73 and pt. 3.6 of this standard.
red, blue, black	36	
the remaining colours	24	
Upto degree 4 at 75-80°C, in hours, not above, for enamels:		
black	4	
the remaining colours	3	

/greyish-green

Colour, appearance and drying period of film are determined on the plates from black hot-rolled sheet iron having dimensions 70x150 mm and thickness 0.25-0.28 mm (GOST 1127-72).

Bending is determined on the plates from black hot-rolled sheet iron having dimensions 20x150 mm and thickness 0.25-0.28 mm (GOST 1127-72).

Hardness of film and lustro are determined on glass plates having dimensions 90x120 mm (GOST 683-75).

The remaining properties are determined on steel plates of grades 08 KP and 08 PS having dimensions 70x150 mm, thickness 0.8-0.9 mm (GOST 16523-70).

Viscosity, content of non-volatile substances (by weight) and degree of grind are determined using undiluted enamel.

For determining the remaining properties, the test enamel (before application on plates) is stirred thoroughly, diluted with xylene upto viscosity 22-25 sec. by viscosimeter V3-4; filtered through mesh No.009-01 (GOST 3584-73, GOST 6613-73) and are applied by paint sprayer on the prepared plates in a single layer.

While determining the resistance of film to the action of water, mineral oil and benzine, the enamel is applied on both sides of the plate. Enamel, applied on the plate, is dried at 75-80°C for 3 hours and during the test of black enamel - for 4 hours. Thickness of film, after drying, for black enamel: 13-18 microns, for remaining colours: 18-23 microns. While determining the colour and appearance of film, enamel is applied upto complete covering of the surface to be painted. Drying, in between ^{the} application of layers, is carried out for 1 hour at 75-80°C and for the last layer - 3 hours.

After hot drying, the plates are held at 20±2°C for 3 hours.

3.3. Colour and appearance of enamel film are determined visually in diffused day light. While determining the colour, the shades of test enamel are compared with the specimens of card index of colour masters or with approved colour specimens.

The specimens, which are to be compared, should be in the same plane at a distance of 30-50 cm from the observer's eye.

3.4. The content of non-volatile substances (by weight) is determined to GOST 17537-72 at $140 \pm 2^{\circ}\text{C}$.

3.5. Covering power (of paint) is determined to GOST 8784-75 section 1. Each layer is dried for 1 hour at $75-80^{\circ}\text{C}$, and the last layer for 3 hours at the same temperature.

3.6. Drying period of enamel is determined to GOST 19007-73. The paper disc may be removed from the surface of film by any method.

3.7. Bending is determined to GOST 6806-73, using a 4^{\times} magnifying glass.

3.8. Resistance of film to the effect of water is determined to GOST 21067-75, during this, the specimen, prepared as per point 3.2, is held in distilled water (GOST 6709-72) for 3 hrs.

After test, the plates with film are held at $20 \pm 2^{\circ}\text{C}$ for 1 hour and they are examined with naked eye. The appearance of the test specimen should be without any change. Negligible change in colour of white enamel film is allowed.

3.9. Resistance of film to the effect of mineral oil is determined to GOST 21064-75, during this, the specimens, prepared as per point 3.2, are kept in aviation oil (GOST 21743-76) for 2 hours.

After test, the plates with film are held at $20 \pm 2^{\circ}\text{C}$ for 1 hour and then examined with naked eye.

The appearance of test specimen should be without any change. Negligible change in colour of white enamel film is allowed.

3.10. Resistance of film to the effect of benzine is determined to GOST 21064-75, during this, the specimens, prepared as per point 3.2, are kept in benzine B-70 (GOST 1013-72) for 6 hours.

Plates with the film, after test, are held at $20 \pm 2^{\circ}\text{C}$ for 1 hour and then checking is done by naked eye.

The specimen, to be tested for appearance, should be without any change. Insignificant change in colour of film of all enamels is allowed.

4. PACKING, MARKING, TRANSPORTATION AND STORAGE

4.1. Packing, marking, transportation and storage of enamel-to GOST 9980-75, section 3-6.

4.2. Enamels are filled in jars having capacity not above 8 litres or in flasks and cans having capacity not above 40 litres.

Use of other types of containers is allowed only by mutual agreement with the customer.

5. MANUFACTURER'S GUARANTEE

5.1. Manufacturer should guarantee the conformity of enamels to the requirements of this standard, provided the conditions of transportation and storage, given in this standard, are observed.

5.2. Guaranteed shelf-life of enamel PF-223 is one year from manufacturing date.

On expiry of guaranteed shelf-life, the enamels (before use) should be checked for conformity to the requirements of this standard.

6. SAFETY REQUIREMENTS

6.1. Enamels PF-223 of different colours are inflammable and toxic materials, which is determined by the properties of solvents and lead compounds, included in the compositions of some enamels.

Vapours of solvents, included in the composition of enamels, have an irritating effect on the mucous membranes of eyes and respiratory tracts.

6.2. Maximum permissible concentration of vapours of solvents and lead compounds in the air of working zone of enamel painting shops and paint-preparation sections, and also the flash point, self-ignition point and explosiveness range in mixture with air for solvents are given in table 2.

Table : 2

Material	Maximum permissible concentration in air of working zone of production shops, mg/m ³	Flash point, °C	Self-ignition point, °C	Range of explosiveness in mixture with air, in % (by volume)
Xylene	50	24	494	1.0-6.0
White spirit	300	33	270	1.4-6.0
Solvent	100	20	553	1.3-8.0
Lead compounds	0.01	-	-	-

6.3. All operations, regarding the use of enamels, should be carried out in conformity with the requirements of GOST 12.3.005-75.

6.4. Rooms of painting shops, sections, store rooms and paint-preparation sections should be equipped with fire fighting means in accordance with GOST 12.4.009-75.

6.5. Those working with enamels, should be provided with individual protection means in conformity with the requirements of GOST 12.4.011-75.

6.6. Dried films of enamels do not have toxic effect on the human organism.

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APPENDIX
(reference)

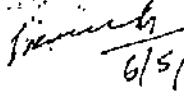
Table for the conformity of designation of colours of enamels PF-223 as per GOST 14923-78 and GOST 14923-69.

Designation as per GOST 14923-78	Former designation as per GOST 14923-69
White-1	White A
White-2	White
Yellow	Yellow
Red	Red
Brown	Brown
Bright light-blue	Bright light-blue
Light blue	Light blue
Bright greyish-blue	Bright greyish-blue
Blue	Blue
Green	Light green
Khaki	Green
Dark-green	Dark-green
Dark-grey	Steel-coloured
Greyish-green	Greyish-green
Black	Black
-	Greyish-beige
-	Greyish-blue
-	Dark-grey

Other standards referred to in this standard:

GOST 3134-78 ;
GOST 9949-76 ;
GOST 9410-71 ;
GOST 1928-67 ;
GOST 10214-78 ;
GOST 18187-72 ;
GOST 696-69 ;
GOST 8420-74 ;
GOST 17537-72 ;
GOST 8784-75 ;
GOST 6589-74 ;
GOST 19007-73 ;
GOST 6806-73 ;
GOST 4765-73 ;
GOST 5233-67 ;
GOST 21065-75 ;
GOST 21064-75 ;
GOST 9980-75 ;
GOST 8832-76 ;
GOST 1127-72 ;
GOST 683-75 ;
GOST 16523-70 ;
GOST 3524-73 ;
GOST 6613-73 ;
GOST 6709-72 ;
GOST 21743-76 ;
GOST 1012-72 ;
GOST 12.3.005-75 ;
GOST 12.4.009-75 ;
GOST 12.4.011-75 .

LIST OF ALTERNATIVE SPECIFICATIONS ACCEPTABLE
IN LIEU OF GOST 14923-78.

SL. No.	ALTERNATIVE SPECIFICATION ACCEPTABLE	REFERENCE OF N OF A COMMITTEE MEETING	SIGNATURE OF OFFICER
1.	JSS:8010-1 paint RFU Enamel Ext. Synth Br.	No. 02200/CQA-ICV/N OF A, Dt: 25 NOV 2002 (REF. DC (I) No. 00955-ICV)	 6/5/03 (P.MALLESWARA RAO) F/M (G)