



HIGH-RESOLUTION PHOTOGRAPHIC PLATES FOR HOLOGRAPHY

Fields of Application

VRP-M High-resolution photoplates for holography are designed to record holograms according to co-directed and counter-directed scheme using a continuous or pulse laser with 530 nm wavelength lasing for the purpose of non-destructive testing of equipment parts, optical data processing, for portrait and moving subjects registration.

PFG-01 High-resolution photoplates for holography are designed to record holograms according to co-directed and counter-directed scheme using a continuous or pulse laser with 633 nm wavelength lasing for the purpose of non-destructive testing of equipment parts, optical data processing, for portrait and moving subjects registration.

PFG-03M High-resolution photoplates for holography are designed to record counter-directed and reflectance holograms.

PFG-03C High-resolution photoplates for holography are designed to record color reflectance holograms.

PFG-04 High-resolution photoplates for holography on dichromated gelatin base are designed to record three-dimensional counter- and co-directed hologram

Characteristics

Name of Indices	VRP-M	PFG-01	PFG-03M	PFG-03C	PFG-04
General Light Sensitivity (S 0,9) unites GOST	0,012-0,030	-	-	-	-
Diffraction efficiency, %, not less than	-	35	40	-	70
Diffraction efficiency, %, not less than $\lambda = 457$ and 514 nm $\lambda = 633$ nm	- -	- -	- -	40 40	- -
Holographic sensitivity (H) when exposed by helium-neon laser (λ -633nm) according to co-directed scheme, when processed with bleaching, provided getting of diffraction efficiency, 35 %, J/m ² , not less than	-	1,5	-	-	-
Holographic sensitivity when exposed by helium-neon laser (λ -633nm) according to counter directed scheme, J/m ² , not more than	-	-	20	-	-



Holographic sensitivity (H) when exposed by a laser according to counter directed scheme, provided getting of diffraction efficiency not less than 30 %, J/m ² , not more than - for argon laser $\lambda = 457$ and 514 nm - for helium-neon laser $\lambda = 633$ nm	- -	- -	- -	40 40	- -
Holographic sensitivity (H) when exposed by a laser ($\lambda = 488$ nm) according to counter directed scheme, provided getting of diffraction efficiency 70 %, J/m ² , not more than	-	-	-	-	2500
Maximum Density on the characteristic curve, D _{max} , B, not less than	3,0	-	-	-	-
Gamma, (γ), not less than	5,0	-	-	-	-
Fog Density, (D ₀), B, not more than	0,02	-	-	-	-
Boundary zone of spectral sensitization, nm, not more than	565	650	680	680	-
Maximum of spectral sensitization, nm	525±5	625±10	635±5	525±5 635±5	-
Resolving Power (R), mm ⁻¹ , not less than	1570	-	-	-	-
Strength of swollen emulsion layer after chemical photographic processing, H (gram-force), not less than	5 (500)	4 (400)	0,5 (50)	0,5 (50)	0,5 (50)
Adhesion between emulsion layer and base after chemical photographic processing, conventional classes A-F	A-C	A-C	A-C	A-C	A-C
Temperature of emulsion layer deformation, °C, not less than	50	90	34	34	34
Metallic silver content, g/m ²	3,0 ± 0,2	2,6 ± 0,2 3,3±0,1	1,6 ± 0,1	3,2±0,1	-
Thickness of photo layer, micrometer	6±1	6±1	7±1	10,5±1	20±2
Antihalation protection	NO	NO	NO	NO	NO



Main sizes of the photographic plates (in mm) as follows:

50x50, 63x63, 76x76, 102x102, 102x127, 127x127, 90x120, 130x180, 180x240, 240x300, 300x406, 406x609 (on glass base of 2,10mm thickness) in plastic cases and cardboard boxes. According to an agreement between a customer and a manufacturer the photographic plates can be manufactured of other sizes.

Open and process the photographic plates under indirect safe light conditions with using a **dark-red** light-filter № 107 for **VRP-M** photographic plates and with using a **dark-green** light-filter № 170 for **PFG-01, PFG-03M** photographic plates.

Climate conditions for photographic plates usage: temperature of environment is (20 ±5)°C, relative humidity of air (65 ± 15)°C.

Chemical-Photographic processing conditions of VRP-M photographic plates:

Name of the stages	Processing time, min	Temperature, °C
Development in SM-6 or VRP-M developer 1:5	2-3	20,0 ± 0,5
Washing in water	2-3	20,0 ± 0,5
Bleaching in PBU-amidol bleacher	to be bleached completely	20,0 ± 2,0
Rinsing	10-20	20,0 ± 0,5
Finishing washing (water with dampener)	1	20,0 ± 0,5
Drying in the open air	to be dried out completely	room temperature

Chemical-Photographic processing conditions of PFG-01 photographic plates

Name of the stages	Processing time, min	Temperature, °C
Development in SM-6 developer	2-3	20,0 ± 0,5
Washing in water	2-3	20,0 ± 0,5
Bleaching in PBU-amidol bleacher	to be bleached completely + 1 min	20,0 ± 2,0
Rinsing	15±1	20,0 ± 0,5
Drying in ethanol:		
in 50% ethanol	2	15-16
in 75% ethanol	2	15-16
in 96% ethanol	2	15-16
Drying in the open air	to be dried out completely	room temperature



Chemical-Photographic processing conditions of PFG-03M photographic plates

Name of the stages	Processing time, min.	Temperature, °C
Development in GP-3 developer	10±1	20,0 ± 0,5
Washing in water	0,5-1,0	15-20
Fixing	3,0±0,1	18-21
Washing	10±1	10-15
Drying in ethanol: in 50% ethanol	2	15-16
in 75% ethanol	2	15-16
in 96% ethanol	2	15-16
Drying in the open air	to be dried out completely	room temperature

Chemical-Photographic processing conditions of PFG-03C photographic plates

Name of the stages	Processing time, min.	Temperature, °C
Hardening	6	19,0±0,5
Washing in running water	Up to 1	19,0±0,5
Development in VRP developer	2-4	19,0±0,5
Washing in water	Up to 1	19,0±0,5
Bleaching (it is possible in GP 431 bleacher)	5-10	19,0±0,5
Rinsing	Up to 1	19,0±0,5
Stop-bath	1	19,0±0,5
Drying in ethanol: in 50% ethanol	2	15-16
in 75% ethanol	2	15-16
in 96% ethanol	2	15-16
Drying in the open air	to be dried out completely	room temperature



Chemical-Photographic processing conditions of PFG-04 photographic plates

Name of the stages	Processing time, min.	Temperature, °C
Thermal hardening in a drying electrical cabinet	60±5	100±2
Swelling in 0.3M triethanolamine solution	1,0±0,1	20±2
Washing in distilled water	1,0±0,1	20±2
Dehydration in water		
Solution of isopropyl alcohol		
25% solution	2,0±0,1	20±2
50% solution	2,0±0,1	20±2
75% solution	2,0±0,1	20±2
100% isopropyl alcohol	2,0±0,1	20±2
Thermal hardening in a drying cabinet	50±5	100±2

Guaranteed shelf life of photographic plates is

VRP-M - 24 months

PFG-01 - 12 months

PFG-03M – from 6 to 9 months depending on the size and package.

PFG-03C - 9 months

PFG-04 - 8 months