

Industrial production of holographic materials



140 km from Moscow is a small modern town of Pereslavl-Zalessky that was founded in 1152, standing on the shores of the ancient Pleshcheyevo lake.



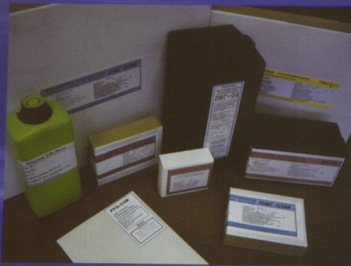
The history of Slavich dates back to July 1, 1931, when in the city Pereslavl-Zalessky the first cinema film factory in the USSR was put into operation. Since the 1970s, there was extensive reconstruction of the factory, the construction of new buildings with large production of magnetic tapes, photographic papers and photographic plates.



On June 7, 1975, the State Commission has put into operation the production plant of photographic plates on a solid base. The Photographic Plate Production Plant has no analogues in domestic photochemistry and is a specific knowledge-intensive enterprise. It was equipped with equipment supplied under the contract with the Japanese firm WAKO-Choeki. Supervision was carried out by Japanese experts with the active participation of employees of the newly formed Plant.



The first photographic plate VR-P for microelectronics was produced in 1975. In subsequent years the production of 20 kinds of plates for science, spectral analysis of ferrous and non-ferrous metals, space research, astronomy, masks for color televisions was done. Photo characteristics of the plates correspond to foreign analogues of the world firms as Agfa, Kodak, etc. And some kinds are unparalleled in the world, they are unique.



Since 1978 commercial production of plates for display holography was carried out. At present the Company produces the following types of photo plates and photo films for holography: VRP-M, PFG-01, PFG-03M, PFG-03C and PFG-04.

VRP-M - plates (films)

High-resolution photoplates (films) 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 - plates (films)

High-resolution photoplates (films) for holography are designed to record holograms according to co-directed and counter-directed scheme using a continuous 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 - plates (films)

High-resolution photoplates (films) for holography are designed to record counter-directed and reflectance holograms.

PFG-03C - plates (films)

High-resolution photoplates (films) for holography are designed to manufacture colored and reflectance holograms.

PFG-04 - plates (films)

High-resolution photoplates (films) for holography based on bichromated gelatin are designed to record three-dimensional counter-directed and co-directed holograms.

These photographic plates and films are supplied to the neighboring foreign countries, USA, Israel, Austria, Czech Republic and Canada.

Production of photographic plates consists of one technological process and includes the following main stages:

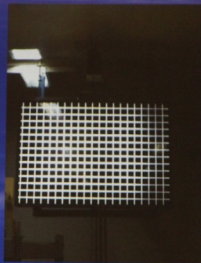
- Preparation of glass;
- Synthesis of emulsion;
- Coating emulsion and auxiliary layers;
- Thermal ageing of photographic plates;
- Cutting, sorting and packing of photographic plates.

Preparation of glass:

For the manufacturing of holographic plates it is used glass of the countries-manufacturers Hungary and Israel. It is of higher quality compared to other manufacturers. The glass is supplied to our company in boxes of large format. For further work the glass is cut into formats: 330*406, 406*609 and 609*812 mm.



Each glass is subjected for visual control. For this purpose it is used special television receivers which determine the flatness of the glass.



Further it is carried out cleaning of the glass (mixing of desalted water and surfactants), chemical processing of the glass (prior removal of residual detergent of desalted water), mechanical treatment of the glass (clear the glass by the platens their PVC sponge when desalted water is applied), the final water rinse of the glass. The glass is ready for coating.



Synthesis of emulsion:

9 kinds of emulsions are produced in the production plant, 3 of them are used in the manufacturing of holographic materials. In the Synthesis Department there are 3 lines of synthesis of emulsions (flushing, sedimentation, separation). For the synthesis of holographic emulsions a washing line is involved.



Production of photographic plates is the production of high purity, so in order to enter the Departments of coating and cutting plates you should go through the special chamber of the blower.



Emulsion coating on glass (film):

After you have prepared the glass and the emulsion it is carried out coating of emulsion and auxiliary layers on the glass or a flexible base.

In the production plant there are 3 coating machines:

Coating machine for the glasses of sizes 330*406 and 406*609 mm



Coating machine for the glasses of size 609*812 mm



Film coating machine with the width of coating 350 mm.



Thermal ageing of plates:

After coating the glass is placed in the chambers of thermal ageing (5 chambers), where semifinished item comes at a certain temperature and humidity to the relevant technological characteristics.



And the final stage of the process is cutting of coated glass (films) into various sizes and packaging.



At each stage of the technological process of manufacture of the plates it is carried out the control of product quality.



In compliance with all regulated parameters in the manufacturing process are obtained holographic materials which are presented in these holograms.





Our company is constantly
expanding the geography of
supplies of holographic products.
We are interested in working with
new clients and we invite all who
are interested in this type of
production.

Thank you for your attention

Yves Gen