

"IMID" MANUFACTURING COMPANY

# PRODUCT CATALOG

Materials and Equipment for Thin-Layer Chromatography



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## Table of Contents

<b>ANALYTICAL PLATES FOR THIN-LAYER CHROMATOGRAPHY</b> .....	3
Sorbfil Plates .....	3
<b>EQUIPMENT OF OWN MANUFACTURE</b> .....	5
Sorbfil Visualizer with Sorbfil TLC View Software .....	5
Sorbfil Densitometer Based on a Lighting Chamber with Sorbfil TLC View Software..	5
Sorbfil Densitometer Based on a Flatbed Scanner with Sorbfil TLC View Software.....	6
Sorbfil Automatic Sampler (APA 2) .....	7
Sorbfil Mechanical Sampler .....	8
Sorbfil Chromatographic UV Cabinet .....	9
Sorbfil Chromatogram Immersion Device (POZh-3) .....	9
Sorbfil Plate Heater (USP-2) .....	10
<b>AUXILIARY EQUIPMENT</b> .....	11
Spray Cabinet .....	11
Sprayer.....	11
TLC Glass Chamber.....	12
Fixing table.....	12
Microsyringes .....	13
Stencil .....	13
Pipettes.....	13
Microcapillary tubes.....	13
Silica gel.....	14
<b>KITS FOR TLC</b> .....	16
Multi-purpose Modernized Kit.....	16
Kit for Semi-quantitative Determination of Mycotoxins .....	16
Kit for Circular TLC.....	18
School Kit for TLC.....	19
Water-Sensitive Paste "Gluk" .....	20
Indicator tubes .....	20
Minimeters.....	21

Since 1991, **the IMID company** produces equipment and consumables under the brand "**Sorbfil**" to conduct analytical studies by means of thin-layer chromatography (TLC).

**Thin layer chromatography (TLC)** is the most accessible and rapid method for quantitative and qualitative analysis of all classes of low molecular weight organic compounds, inorganic substances and high polymers, carried out with the help of special equipment on plates coated with a layer of sorbent.

**Sorbfil devices, plates, auxiliary equipment and complete sets** are intended for equipping analytical and toxicological laboratories, drug control authorities, centers for standardization and metrology, the Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor), agro-chemical services, plant protection stations, veterinary laboratories, forensic experts offices, narcological dispensaries, industrial enterprises and research institutes of the food industry and pharmacology, as well as Criminal Investigation Laboratories of the Ministry of Internal Affairs, the customs committee and other inspectorates. The equipment and consumables are certified and included in the state register of measuring instruments under No. 23965-08 and approved for use in the Russian Federation and the countries belonging to EEU. Techniques are certified and have the certificate of state metrological certification.



**The company's specialists** have years of experience in the field of precision engineering and instrumentation.



## **ANALYTICAL PLATES FOR THIN-LAYER CHROMATOGRAPHY**

### **Sorbfil Plates**

Sorbfil plates (TU 4215-002-43636866-2007) are designed for analysis of substances by thin-layer chromatography. Sorbfil plates are produced on a polymer (polyethylene terephthalate) or aluminum carrying base with applied working layer of fractionated wide-porous silica gel with a thickness of 90-120  $\mu\text{m}$ , fixed by means of a special binding component. The permissible thickness of the sorbent layer on one plate is  $\pm 5 \mu\text{m}$ .



Sorbfil plates are packaged by 50 pieces in a pack. Each pack is accompanied by a certificate. Guarantee shelf life of plates is 5 years from the date of manufacture, when stored in the original pack at room temperature in the absence of corrosive fumes and gases. Activation of plates stored for more than 1 year is mandatory.

## Technical features:

Kind	Type	Size of sorbent particles, $\mu\text{m}$	Base material	Luminophor $\lambda$ nm	Plate size, cm	Weight of the box with plates, kg
/	TLC-P	5-17	PET sheet	-	10x10 10x15 10x20	0.170 0.250 0.335
	TLC-P-UV	5-17	PET sheet	254	10x10 10x15 10x20	0,165 0,250 0,340
	TLC-A	5-17	Aluminium sheet	-	10x10 10x15 10x20	0.170 0.260 0.345
	TLC-A-UV	5-17	Aluminium sheet	254	10x10 10x15 10x20	0.170 0.270 0.345
High-performance plates for thin-layer chromatography	HPTLC-P	8-12	PET sheet	-	10x10 10x15	0.165 0.235
	HPTLC-P-UV	8-12	PET sheet	254	10x10 10x15	0.170 0.250
	HPTLC-A	8-12	Aluminium sheet	-	10x10 10x15	0.175 0.250
	HPTLC-A-UV	8-12	Aluminium sheet	254	10x10 10x15	0.180 0.270

## Legend:

<b>TLC</b>	analytical plates for thin-layer chromatography
<b>HPTLC</b>	high-performance plates for thin-layer chromatography
<b>P</b>	on the basis of polyethylene terephthalate (PET) plastic
<b>A</b>	on the basis of aluminum foil
<b>UV</b>	fluorescent in the ultraviolet spectrum

## EQUIPMENT OF OWN MANUFACTURE

### Sorbfil Visualizer with Sorbfil TLC View Software

The visualizer is a new generation densitometer and features such characteristics as:

- ergonomic modern design
- effective illumination in daylight and ultraviolet light with a wavelength of 365 nm, due to the use of LEDs with cooling
- improved uniformity of illumination
- environmentally friendly with low power consumption
- membrane keypad with colour display buttons
- USB video camera with varifocal megapixel lens
- the possibility of working in a mobile laboratory using power from an autonomous source at 12 V.



### Sorbfil Densitometer Based on a Lighting Chamber with Sorbfil TLC View Software

Sorbfil Densitometer based on a lighting chamber with Sorbfil TLC View program (TU 4436-003-16943778-99) is designed for the calculation of parameters and quantitative evaluation by thin-layer chromatography.

Simplicity of design, learnability and user-friendliness, affordable cost and high accuracy of results are targeted at laboratories of any level. The use of a Sorbfil densitometer based on a lighting chamber with Sorbfil TLC View program greatly expands the possibilities of thin-layer chromatography, transferring this method from qualitative to quantitative one.

The densitometer does not require any modification of existing thin-layer chromatography techniques and can calculate any chromatogram visible in daylight or ultraviolet light at wavelengths of 365 and 254 nm.

Sorbfil densitometer based on a lighting chamber with the Sorbfil TLC View program with the possibility of studying chromatograms in ultraviolet light includes the following:

- lighting chamber (daylight, ultraviolet emission spectrum of 254 and 365 nm);
- color video camera;
- video capture device;
- Sorbfil TLC View program for estimation and calculation of chromatography parameters.



Sorbfil densitometer based on a lighting chamber with Sorbfil TLC View program, using chromatogram images, allows two types of quantitative calculations:

- calculation of the percentage composition of substances in the mixture;
- calculation of the concentration of the substance in the sample.

Sorbfil densitometer based on a lighting chamber with Sorbfil TLC View program is included in the State Register of Measuring Instruments (state registration number **23965-08**).

## **Sorbfil Densitometer Based on a Flatbed Scanner with Sorbfil TLC View Software**

It is designed to calculate the parameters and quantify the results of analyzes in thin-layer chromatography in the visible spectrum.



It allows to make two types of quantitative calculations using chromatogram images:

- calculation of the percentage composition of substances in the mixture;
- calculation of the concentration of the substance in the sample.

For calculation, a Sorbfil plate is placed on the glass of the flatbed scanner. The plate image received by the scanner is transmitted to the computer, recorded and then processed by the Sorbfil TLC View program. Densitometer based on a flatbed scanner does not require any modification of existing thin-layer chromatography techniques and can calculate any Sorbfil plate visible in daylight.

## Sorbfil Automatic Sampler (APA 2)

Automatic sampler (TU 4215-022-16943778-2004) is designed for automated application of samples of standard and tested solutions as lines or dots on Sorbfil plates.



The width of the processed Sorbfil plates is up to 200 mm. The maximum amount of the applied sample is 10  $\mu$ l. The number of samples is up to 24. The application is performed by spraying the sample onto the Sorbfil plate with compressed air while the syringe is reciprocating along the direction of the sample application. The application of samples in the form of narrow lines ensures the highest achievable resolution in thin-layer chromatography.

Vials of 2 ml ( $\varnothing$ 12x32 mm) with screw caps with a silicone gasket are used as sample containers.

### Technical features:

- size of the processed Sorbfil plates: max. 100x200 mm;
- syringe volume: 10  $\mu$ l;
- length of the applied line: 0-180 mm;
- number of samples: 24;
- sample feed rate: from 5  $\mu$ l/sec;



- temperature of the heating table: max. 120°C;
- volume of a chamber for flushing liquid: 50 cm<sup>3</sup>;
- voltage of electric current: 220 V;
- frequency of electric current: 50 Hz;
- power consumption: max. 50 W;
- compressed air pressure (nitrogen): 2 kg/cm<sup>2</sup>;
- compressed air (nitrogen) consumption: max. 5 l/min;
- dimensions: 520x320x420 mm;
- Weight: max. 13 kg.

## Sorbfil Mechanical Sampler

Sorbfil mechanical sampler (TU 4215-005-16943778) is designed for dosed dotted application of samples and standard solutions of analyzed substances on Sorbfil plates.



The sampler is used together with the USP-1 plates heater and the MSh-10 micro-syringe with a guide that has a 40 mm long needle sharpened at a right angle.

### Technical features:

- Maximum dimensions of the Sorbfil plates: 100x200 mm;
- distance of the sample start line from the edge of the plate: from 10 to 15 mm;
- distance between points of samples application:
  - minimum: 2.5 mm
  - maximum: 20 mm
  - resolution of the device: 2.5 mm
- sample volume to be measured:
  - minimum: 0.2 µl
  - maximum: 9 µl
- overall dimensions: max. 320x200x270 mm;
- weight: max. 3 kg.

## Sorbfil Chromatographic UV Cabinet

Sorbfil chromatograph UV cabinet model UFS 254/365 (TU 4215-004-16943778) is designed for viewing chromatograms in ultraviolet light:

- substances that fluoresce at a wavelength of 365 nm, are visible as colored spots on a dark background;
- substances absorbing UV light at a wavelength of 254 nm, are visible as dark spots on a TLC plate containing UV indicator.



### Technical features:

- KLCh 9/UV 365 nm ultraviolet fluorescent lamp;
- DKB 9 254 nm mercury bactericidal lamp;
- the size of the monitored TLC plate: max. 150x150 mm;
- mains voltage: 220 V;
- power consumption, VA: max. 30 W;
- overall dimensions: max. 320x200x270 mm;
- weight: max. 5 kg.

## Sorbfil Chromatogram Immersion Device (POZh-3)

The device is designed for analysis of the composition of substances by the method of uniform immersion of Sorbfil plates in the developing liquid, and it ensures the clarity of the chromatographic zones and uniformity of the background color of the Sorbfil plate after treatment (compared to the spraying method). The use of POZh-3 is recommended for quantitative calculations of chromatograms.

### Technical features:

- Maximum dimensions of the Sorbfil plates: 100x150 mm;
- cuvette capacity: 125 cm<sup>3</sup>;
- immersion (extraction) speed: Adjustable, from 30 to 50 mm/s;
- holding time in immersed state: adjustable by the timer, from 1 to 15 seconds;
- power: +12V through the adapter from the network 220 V, 50 Hz;
- power consumption: 30 VA;

- overall dimensions: max.: 230x160x330 mm;
- weight: 5 kg.



### Sorbfil Plate Heater (USP-2)

USP-2 heater (TU 4215-005-45843003-99) is used to heat the Sorbfil plates at different stages of analysis.



When applying samples and standard solutions, heating the plates to the specified temperature provides a compact spot (for example, when analyzing for mycotoxins) and, accordingly, increases the efficiency and clarity of the separation. Heating the plates after the samples the developing reagent application ensures their accelerated drying or development for subsequent analysis.

USP-2 uses a microprocessor controller for temperature regulation, which makes it possible to improve the accuracy and functional characteristics of the plates drying process.

For controlled application of samples, the heater is equipped with a removable ruler with slots in increments of 10 mm.

#### Technical features:

- size of the processed Sorbfil plates: max. 100x200 mm;
- limit for adjusting the table temperature: 35-120°C;
- accuracy of temperature setting: 5°C;
- supply voltage: 220 V;
- power consumption: 50 V-A;
- dimensions: 300x135x16 mm;
- weight: 700 g.

## AUXILIARY EQUIPMENT

### Spray Cabinet

The spray cabinet is designed for safe application of a developing reagent to the Sorbfil plates.

When spraying, the Sorbfil plates placed on the fixing table are put in the cabinet. To connect the cabinet to the exhaust ventilation, an opening is cut out in its rear wall. The cabinet is made of a material resistant to aggressive media.



#### Technical features:

- Dimensions: 320x150x220 mm;
- Weight: max. 500 g.

### Sprayer

The sprayer is designed for application of a developing reagent to the Sorbfil plates.



The glass sprayer is mounted on a PVC bottle and combines the ejection system and a bowl for a solution in one housing.

#### Technical features:

- Dimensions: 170 x  $\varnothing$ 26 mm.
- Bottle volume: 110 $\pm$ 20 ml.

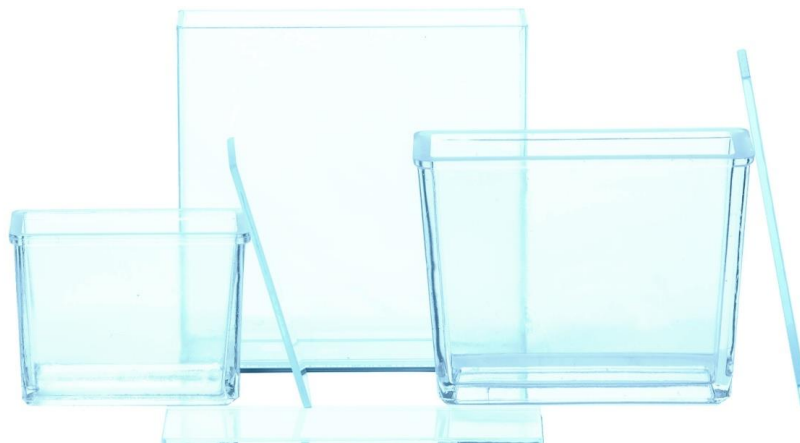
- Weight: max. 500 g.

## TLC Glass Chamber

TLC glass chambers are designed for the development of plates after application of samples of analytes and standard solutions on them.

TLC chambers are made of chemically resistant glass and have a special separation protrusion on the bottom for reliable fixing of plates and saving used eluent and equipped with a grind to size lids. They are available in the following range:

- TLC chamber for plates 10x10 cm;
- TLC chamber for plates 15x15 cm;
- TLC chamber for plates 20x20 cm (glued with silicone).



## Fixing table

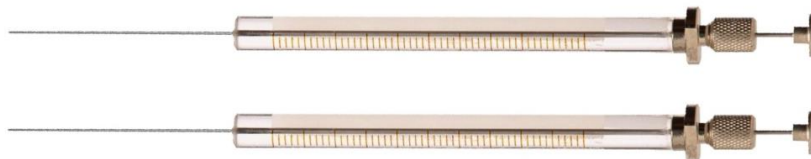


The fixing table is intended for placement of Sorbfil plates when a developing reagent is applied to them. The table is made of stainless steel.

### Technical features:

- Dimensions: 100x140 mm.
- Weight: max. 500 g.

## Microsyringes

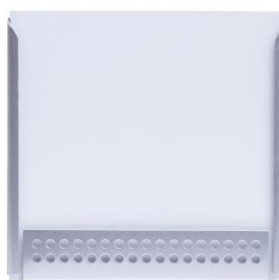


Microsyringes produced in Russia with a volume of 1 to 50  $\mu\text{l}$  are designed for dosing application of standard solutions and samples of analytes of Sorbfil plates.

For a qualitative application of samples, the needle has a straight polished section.

## Stencil

The stencil is intended for preliminary marking of Sorbfil plates or for applying samples to Sorbfil plates manually through special holes.



The lower row of holes provides the starting line at a distance of 10 mm from the bottom edge of the plates, and the upper line at 15 mm. The end holes are made at a distance of 10 mm from the right and left edges of the plates. The distance between the holes in the row is 5 mm. The size of the stencil: 105x100 mm.

## Pipettes



Calibrated pipettes with graduation lines (GOST 20292-74) are designed for dispensing liquids when preparing working solutions. The volume of the liquid to be dosed is up to 0.1 and 0.2 ml.

## Microcapillary tubes

Glass microcapillary tubes are used as samplers for chromatographic analysis and laboratory testing. They are made of chemically resistant glass and allow dry-air and chemical sterilization.



The IMID company offers microcapillary tubes with the following characteristics:

Glass microcapillary tubes, volume, $\mu$ l	External diameter, mm	Internal diameter, mm	Length, mm
1	0.8	0.2	30
2	0.8	0.3	28
3	0.8	0.3	42
10	0.9	0.5	50

## Silica gel

Silica gel is one of the most widely used chromatographic sorbents. It is produced in a wide range of shapes and sizes. Its beyond example ability for linear and non-linear isothermal separation, almost complete inertia to labile compounds, makes it the only logical choice.



The IMID company not only uses silica gel as a sorbent on the TLC plates of its own production, but also offers it for sale in various fractions for use in other types of chromatographic studies.

<b>No.</b>	<b>Silica gel: column and for TLC</b>	<b>Particles size</b>
1	KSK column silica gel, kg	15-40 $\mu\text{m}$
2	KSK column silica gel, kg	50-100 $\mu\text{m}$
3	KSK column silica gel, kg	50-160 $\mu\text{m}$
4	KSK column silica gel, kg	100-200 $\mu\text{m}$
5	KSK column silica gel, kg	160-315 $\mu\text{m}$
6	KSK column silica gel, kg	315-500 $\mu\text{m}$
7	Silica gel for TLC, kg	5-17 $\mu\text{m}$
8	Silica gel for TLC, kg	8-12 $\mu\text{m}$
9	ASK activated silica gel for column chromatography, kg	100-200 $\mu\text{m}$
10	ASK activated silica gel for column chromatography, kg	0.25-0.5 mm
11	KSK column silica gel for TLC, kg	100-160 $\mu\text{m}$



## KITS FOR TLC

### Multi-purpose Modernized Kit

The **NTH-UM** multi-purpose modernized kit (TU 9443-001-10141977-93) includes plates and laboratory equipment required for thin layer chromatography analysis.



#### The kit contents:

- Sorbfil mechanical sampler
- a plates heater USP-1 (as part of the sampler)
- an UV cabinet UFS 254/365
- a POZh-3 chromatogram immersion device
- device for convective plate heating (electric drying fan)
- Sorbfil plates with dimensions 100x100 mm (10 pkg.)
- a TLC glass chamber for plates 10x10 cm
- sprayer
- a spray cabinet with a fixing table
- stencil for marking plates
- pipettes for 0.1 or 0.2 ml (3 pcs)
- microsyringe MSh-10 with a guide (as part of the sampler)
- pinching tool
- latex gloves (5 pairs)
- passport

### Kit for Semi-quantitative Determination of Mycotoxins

The **NTH-MT** kit (TU 9443-001-10141977-93) is designed for detection, identification and quantification of mycotoxins in food raw materials and food products. The kit is comprehensive and allows controlling the following mycotoxins:

- Desoxynivalenol (Vomitoxin)
- Patulin
- Zearalenone
- Aflatoxin B1
- Aflatoxin M1
- T-2 toxin

The kit includes concentrating cartridges for sample preparation of mycotoxins and equipment for quantitative analysis of mycotoxins by thin layer chromatography, as well as standard solutions of mycotoxins.



### The kit contents:

- High-performance Sorbfil plates type HPTLC-A 100x100 mm (8 pkg.)
- High-performance Sorbfil plates type HPTLC-P 100x100 mm (2 pkg.)
- Sorbfil densitometer based on a lighting chamber with Sorbfil TLC View program
- Sorbfil mechanical sampler
- Sorbfil chromatogram immersion device (POZh-3)
- a TLC glass chamber for plates 100x100 mm
- microsyringe MSh-10 (2 pcs) with a guide (as part of the Sorbfil sampler)
- device for convective plate heating
- stencil for marking plates 100x100 mm
- a spray cabinet with a fixing table
- a plates heater USP-1M (as part of the Sorbfil sampler)
- pinching tool
- pipettes calibrated for 0.1 or 0.2 ml (6 pcs)
- sprayer
- latex gloves (5 pairs).

### Consumables for sample preparation of extracts of samples:

- Diapak A-3 (20 pcs.)
- Diapak AU-3 (20 pcs.)
- Diapak S (40 pcs.)
- Diapak P-3 (3 pcs.)
- Diapak N (10 pcs)
- Diapak S16M (10 pcs.)

### Standard solutions of mycotoxins:

- Desoxynivalenol (concentration 100 µg/ml) (1 pc)
- Patulin (concentration 100 µg/ml) (1 pc)
- Zearalenone (concentration 100 µg/ml) (1 pc)
- Aflatoxin B1 (concentration 10.5 µg/ml) (1 pc)

- Aflatoxin M1 (concentration 1 µg/ml) (1 pc)
- T-2 toxin (concentration 100 µg/ml) (1 pc)
- MVTN detecting reagent of patulin (1 g)

The set of supplied consumables provides preparation of **50** single samples of each of the above mycotoxins.

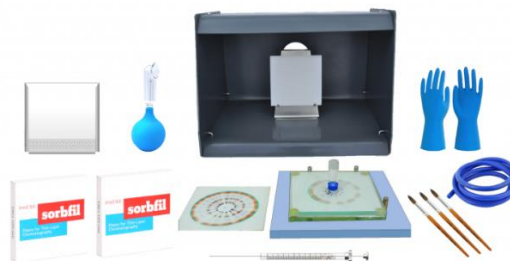
The NTH-MT kit can be supplied for the analysis of one or more mycotoxins (for example, a NTH-vomitoxin kit, a NTH-patulin kit, etc.), with the recalculation of the order price. In this case, each kit is equipped with common equipment, corresponding consumables (concentrating cartridges, standard solutions), as well as the necessary plates.

In addition, kits may be equipped for analysis of other toxins as well, such as: ochratoxin A and sterigmatocystin.

The kit can also be supplied in the configuration that provides semi-quantitative determination of mycotoxins (NTH-MT-PK kit) - without equipping it with a densitometer.

## Kit for Circular TLC

The **NTH-RS** kit (TU 4215-015-43636866-2012) includes plates and the necessary equipment for analysis by circular thin-layer chromatography.



Circular chromatography, essentially is a circular thin-layer chromatography using a new operation - "focusing" and the possibility of calculation on a densitometer. The method of circular TLC is characterized by simplicity of operation, visibility of chromatograms and high reliability of results.

The use of the kit for the circular TLC of the NTH-RS model allows carrying out comparative (qualitative) and quantitative analyzes with previously unattainable accuracy (comparable to the accuracy of HPLC on short columns).

Areas of NTH-RS application: forensics, pharmaceuticals, ecology, chemical production - namely, where fast and accurate comparative analysis is required.

### The kit contents:

- Sorbfil plates with dimensions 100x100 mm (50 pcs) HPTLC-A-UV - 2 pkg.
- table with locking pins – 1 pc.

- bottom glass 100x100 mm – 1 pc.
- top glass with a center opening 100x100 mm – 1 pc.
- Vials 2 ml with a cloth wick in the lid - 10 pcs.
- microcompressor – 1 pc.
- PVC tube 0,5 m – 1 pc.
- stencil – 1 pc.
- microsyringe MSh-10 – 1 pc.
- watercolor brushes – 3 pcs.
- sprayer – 1 pc.
- a spray cabinet with a fixing table - 1 pc.
- latex gloves – 5 pairs
- Sorbfil TLC View software
- passport

## School Kit for TLC

The **NTH-Sh** kit (TU 9443-001-10141977-93) is designed for equipping the chemistry classrooms of schools with an enhanced course focused on studying chemistry, elementary education of college and university students.



On the equipment included in the kits, students are trained to carry out analyzes by thin-layer chromatography, including a series of sequential operations:

- sample preparation
- preparation of chromatographic plates
- the application of sample analytes and standards on the plate
- chromatographic procedure
- detection of analytes on the plate
- evaluation of the results

### The kit contents:

- Sorbfil plates with dimensions 100x100 mm - 2 pkg.
- glass microcapillary tubes for samples application - 100 pcs.
- a TLC chamber for plates 100x100 mm - 1 pc.
- pinching tool - 1 pc.
- stencil for drawing start points - 1 pc.
- sprayer – 1 pc.
- a spray cabinet with a fixing table (1 per 14 kits) - 1 pc.
- instructional guidelines - 1 copy.

## QUALITY CONTROL OF PETROLEUM PRODUCTS

### Water-Sensitive Paste "Gluk"

The indicator water-sensitive paste for the fuel "Gluk" determines the level of sludge in the following oil products: benzene, toluene, xylene, gasoline, kerosene, gas condensate, diesel fuel, various oils, crude oil and heavy oil products heated up to 40-50°C.

The paste is a low-toxic viscous-flowing mass from light gray to light brown in color. Upon contact with water (fresh, salty), the paste is colored in a bright crimson color.

The "Gluk" paste is packaged in 60 grams, the shelf life is 3 years. Pasta is not subject to mandatory certification in the State Standard authorities.

### Indicator tubes

The development of methods of analytical chromatography makes it possible to single out separately an autodetector chromatography in which the sorbent itself serves as a detector, performing a dual function:

- Separation of the analyte into components;
- Determination of the concentration of the components in the substance.



It is possible to use these methods to assess the chemical properties of oil products, natural and waste water, etc. These express methods allow to determine the hydrocarbon composition of petroleum products, the phase of composition of the water contained in them, as well as the number of additives and trace impurities, including sulfur compounds.

Indicator tubes provide the analysis of petroleum products within 15-20 minutes in the field environment. The detection limits of the substances under study and the accuracy of the measurements are at the level of the classical methods for the analysis of petroleum products. Re-colored areas of substances can appear in both visible and UV light.

The following indicator tubes (IT) are commercially available for the quantitative determination of the substances:

1. undissolved water in fuels: (IT-NV-15 from 0.001 to 1%)
2. total water in fuels: (IT-SV-10 from 0.02 to 0.5%)
3. anti-icing additives in fuels: (IT-PVK from 0.1 to 0.5%)
4. water in anti-icing fluids: (IT-RV-50 from 0.05 to 1%)
5. water-soluble acids and alkalies in light oil products, detergent additives and amine group additives in motor gasoline: (ITU-VKSch)
6. presence of lead in gasolines: (IT-TES from 0.013 to 3 g/dm<sup>3</sup>)
7. presence of ferrocene additives in gasolines: (IT-FTs, from 0.001 to 0.1 g/dm<sup>3</sup>)
8. presence of manganese-containing additives in gasoline: (IT-CTM from 10 to 50 mg/dm<sup>3</sup>).

## Minimeters

Each complete set contains indicator tubes in an amount of 10 pcs. and devices for analysis.



The IMID company offers the following sets, which differ in completeness and measurement technique:

### 1) PMHM-NV-15:

It is designed to determine the mass fraction of undissolved water in motor fuels.

#### The method used:

Selective chemisorption chromatographic adsorption of undissolved water in motor fuels with the silica gel indicator adsorbent placed in the indicator tube, and the subsequent measurement of the length of the discolored zone of water adsorption.

#### The kit contents:

- 1) indicator tubes **IT-NV-15** in the amount of 10 pcs.;
- 2) a medical disposable syringe of 2-5 cm<sup>3</sup>;
- 3) a polymer tube with a length of 70 mm and an internal Ø of 2.5-3.5 mm;
- 4) cutter;
- 5) measuring scale;
- 6) pusher for sorbent compaction.

## 2) **PMHM-SV-10:**

It is designed to determine the amount of total water in motor fuels.

### **The method used:**

Selective chemisorption chromatographic adsorption of water in motor fuels with the indicator adsorbent placed in the indicator tube, and the subsequent measurement of the length of the discolored zone of water adsorption.

### **The kit contents:**

- 1) indicator tubes **IT-SV-10** in the amount of 10 pcs.;
- 2) a medical disposable syringe of 10 cm<sup>3</sup>;
- 3) a polymer tube with a length of 70 mm and an internal Ø of 2.5-3.5 mm;
- 4) cutter;
- 5) measuring scale;
- 6) pusher for sorbent compaction.

## 3) **PMHM PVK:**

It is designed to determine the amount of anti-crystallization liquids in jet fuels.

### **The method used:**

Selective chemisorption chromatographic adsorption of anti-icing fluids: I, I-M, THF, THF-M, in jet engine fuels, with a silica gel indicating adsorbent placed in an indicator tube, and subsequent measurement of the length of the decolorized anti-icing fluid adsorption zone.

### **The kit contents:**

- 1) indicator tubes **IT-PVK** in the amount of 10 pcs.;
- 2) a medical disposable syringe of 5 cm<sup>3</sup>;
- 3) a polymer tube with a length of 70 mm and an internal Ø of 2.5-3.5 mm;
- 4) cutter;
- 5) measuring scale;
- 6) pusher for sorbent compaction.

## 4) **PMHM-RV-50:**

It is designed to determine the mass fraction of dissolved water in anti-crystallization additives, alcohols, aldehydes and ketones.

### **The method used:**

Selective chemisorption chromatographic adsorption of water in the anti-crystallization additives, alcohols, aldehydes and ketones with the indicator adsorbent

placed in the indicator tube, and the subsequent measurement of the length of the discolored zone of water adsorption. The measuring range is from 0,05 to 1% of the mass fraction of water.

### The kit contents:

- 1) indicator tubes **IT-RV-50** in the amount of 10 pcs.;
- 2) a medical disposable syringe of 2 cm<sup>3</sup>;
- 3) a polymer tube with a length of 70 mm and an internal Ø of 2.5-3.5 mm;
- 4) cutter;
- 5) measuring scale;
- 6) pusher for sorbent compaction.