

Annex 1_TECHNICAL SPECIFICATIONS OF THE REQUEST	Total quantity
<p>Lot No.1 /: Fourier-Transform Infrared Spectroscopy Spectrometer</p> <p>1.1. UATR (Universal Attenuated Total Reflectance) accessory with high resistance to solvents, with Diamond/ZnSe single reflection crystal UATR accessory features include:</p> <ul style="list-style-type: none"> ◆ Automatic recognition – as soon as the accessory is placed in the cell compartment, the UATR is recognised along with its serial number and system suitability checks can be performed. ◆ No adjustment or setup required – once installed in the cell compartment, the accessory is ready for use. ◆ Integrated – the plug-in design means that the accessory becomes an integral part of the instrument after installation. ◆ A clamping bracket with a pressure sensor is included in the standard package. <p>Real-time spectrum preview mode and pressure reading ensure proper placement and good contact of the solid sample with the crystal before scanning. Includes polystyrene reference material for UATR and a cell for volatile liquids.</p> <p>1.2. The upper platform with a Ge single-reflection crystal for UATR accessory</p> <p>1.3. UATR accessory with 25x ZnSe crystal on a platform with a chute for liquids</p> <p>The horizontal ATR accessory is mounted on a platform that is inserted into the cell compartment and is not integrated into the instrument as the UATR accessory. Supplied with a 50 mm ZnSe crystal with 25 reflections at 45 degrees for liquids, pastes and gels. To use the accessory, one only needs to insert it into the cell compartment. The accessory is automatically recognised by the instrument and software.</p> <p>1.4. License for 1 copy of the software add-on</p> <p>1.5. Analytical starter kit for measuring solid and liquid samples on an IR spectrometer</p> <p>1.5.1. The analytical sample preparation starter kit includes the following components:</p> <ul style="list-style-type: none"> ✓ Atlas manual hydraulic press with 15 tonnes of force, ✓ Pre-assembled mould for making 13 mm diameter discs with a port for connecting a vacuum pump, ✓ Slide holder for 13 mm diameter discs, ✓ Mortar and pestle, ✓ Powdered KBr (50 g), ✓ Assembled universal frame of the Omni-Cell liquid cell, ✓ 4 mm thick rectangular KBr glasses for liquid cells (1 pc with holes and 1 pc solid/pack) (2 packs), ✓ 4 mm thick rectangular CaF₂ glasses for liquid cells (1 pc with holes and 1 pc solid/pack) (2 packs), ✓ 4 mm thick round KBr glasses for liquid cells (2 pcs/packs) (2 packs), ✓ Set of rectangular gaskets of different thickness for Omni-Cell liquid cells, ✓ 0.1 mm thick round PTFE gaskets, for collapsible cells (5 pcs/packs), ✓ 2 ml syringe with Luer connector, ✓ Nujol oil for IR spectroscopy (25 ml). 	1

- 1.6. One-piece 0.1 mm flow cell with BaF₂ glass with two Luer-Lock connectors
- 1.7. Rectangular 4 mm glass for semi-detachable cells (2 pcs/packs) 4 mm thick rectangular glasses with BaF₂ for semi-detachable cells (1 pc with holes, 1 pc solid)
- 1.8. Gas-tight 1000 series 5 ml syringe with PTFE plunger and Luer-Lock tip
- 1.9. General database of ATR FTIR spectra for forensic examinations
The library was developed for the analysis of forensic samples, hazardous materials and white powders.
Contains 10105 FTIR spectra obtained on the ATR accessory:
- Compounds of common interest in forensic laboratories;
 - Selected chemicals included in the EPA CAMEO database for chemical emergency responders and the USCG CHRIS hazardous chemicals database;
 - Commercially available white powders and white chemicals
- 2.0. General database of FTIR spectra of polymers, coatings, paints and petrochemicals
- 2.1. Wiley database of IR spectra of fibres and textiles
The spectral library includes natural and synthetic fibres of various origins.
Includes natural fibres, man-made fibres and various textile chemicals. Includes 485 spectra
- 2.2. Rectangular gaskets for semi-demountable cell, of different thicknesses, 12 pcs/pack.
Set of rectangular gaskets of different thicknesses for semi-demountable cells
The set includes 2 polytetrafluoroethylene gaskets of 0.05, 0.1, 0.2, 0.5 and 1.0 mm thicknesses and 2 lead 0.025 mm gaskets.
- 2.3. Waste tube to be connected to a liquid IR cell
Waste tube to be connected to a liquid IR cell with Luer-Lock connector
- 2.4. Desiccant replacement kit
Desiccant replacement kit
- 2.5. Portable battery pack (UPS)
The battery pack is an additional power source.
This uninterruptible power supply is an 18 V battery with a maximum current of 3 amps.
The battery pack includes:
- ✓ Power adapter (12 V) from a car socket
 - ✓ Power supply unit (70 W).
- 2.6. Power adapter (12 V) from a car socket The car adapter is a mandatory component of the portable battery pack (UPS)
- 2.7. PC Vinga I5, 16Gb, 250Gb, 22", Windows 10 Pro x64
- 2.8. Cover CORE 1K uninterruptible power supply
1 kVA/0.9 kW; 1-f. input/1-f. output
Rack-mounted, with internal batteries (3 pcs * 12V/7Ah)
- 2.9. The software package for FTIR and Raman includes the following functions:
- Full configuration of the device and control functions;
 - Basic and advanced data processing functions;
 - Spectral arithmetic calculations with a special equation editor;
 - COMPARE spectrum comparison function;
 - Possibility of quantitative determination according to developed PLS, PCR algorithms, the Bouguer-Lambert-Beer law;
 - Development of quantification methods according to the Bouguer-Lambert-Beer law;
 - Simple macro developer;

<ul style="list-style-type: none"> • General data processing (primary processing of spectra); • Search by spectra; • Search in primary libraries; • Editable report templates and data export; • Built-in tutorials and online help; • Laboratory planner; • Scanalyze for real-time results during scanning. <p>The software package includes:</p> <ul style="list-style-type: none"> ✓ USB flash drive with manual and software package for IR and thermal analysis. ✓ License for 1 copy of the software <p>WARRANTY PERIOD min 12 month</p>	
Lot No.2 /: Analyser of Elemental Composition of Organic Substances, Metals, and Alloys	
<p>1.1. Use of equipment for determining the mass fraction of chemical elements in homogeneous monolithic and powdered objects under laboratory conditions. Control objects:</p> <ul style="list-style-type: none"> - Products (product fragments, castings) of various metal alloys of any shape; - Inorganic objects: ores, minerals, ceramics, glass, building materials, slag, sludge, dumps and other industrial waste; - Determination of chemical elements in liquids and organic samples (optional). <p>2. Components and technical requirements of the elemental composition analyser The equipment shall have all the necessary modules and consumables to get started.</p> <p>2.1. The elemental composition analyser shall have the following technical characteristics:</p> <ul style="list-style-type: none"> - Continuous operation time – unlimited; - Operating time from the autonomous power supply system – over 6 hours; - Power supply voltage – from the AC network with a frequency of 50/60 Hz -100-240 V; - Power consumption of the measuring unit – below 30 V; - Dimensions of the measuring chamber – 397x225x153 mm; - Maximum weight of the measured sample – from 1 mg to 80 kg; - Measuring unit dimensions – 455x302x301 mm; - Measuring unit weight – no more than 25 kg; - Warranty period – at least one year <p>2.2. Operating conditions:</p> <ul style="list-style-type: none"> - Test range of operating temperatures – +10 to +450 C - Relative humidity in the entire operating temperature range – < 90% <p>2.3. Metrological characteristics</p> <ul style="list-style-type: none"> - Simultaneous determination of elements from magnesium 12Mg to uranium 92U (optional 11Na) in a single measurement. Estimation of 6C carbon content in steels and cast irons; - Range of measured elemental contents – from 0.005 to 100%; - Detection limits of elements – from 1-10 ppm; 	1

<p>- Typical measurement time – 2-30 s</p> <p>2.4. After-sales service:</p> <ul style="list-style-type: none"> - Warranty and post-warranty service; - Periodic maintenance of the device; - Remote diagnostics of analyser components <p>4. Requirements for commissioning and personnel training</p> <p>4.1. It is necessary to carry out commissioning and start-up of the device, train and instruct personnel by a certified specialist at the location of the equipment, and issue relevant training certificates.</p> <p>4.2. The device shall be calibrated in accordance with the requirements of UA State Standard ISO EN 17025. Calibration shall be performed after the device is put into operation and a calibration certificate shall be provided.</p> <p>4.3. The Supplier company shall have a service department and employees with appropriate qualifications (service engineers) in Kyiv or Kyiv region who have the necessary knowledge and experience to install, adjust the equipment and ensure the uninterrupted operation of the device during the warranty and post-warranty periods.</p> <p>4.4. The device shall be supplied with the instruction manual for maintenance and operation of the equipment in Ukrainian or Russian or English with translation previously indicated languages.</p> <p>4.5. The period of full warranty service of the device shall be at least 12 months, excluding consumables and wearing materials.</p> <p>4.6. It is necessary to provide post-warranty service throughout the entire service life of the device (confirmed by a letter from the manufacturer or its official territorial representative).</p> <p>4.7. The period of guaranteed production of spare parts and consumables for the device shall be at least 5 years (confirmed by a letter from the manufacturer or its official territorial representative).</p> <p>5. Terms of supply</p> <p>5.1. The Goods shall be delivered by the supplier's vehicles at its expense on DDP terms to the address of the equipment location.</p> <p>5.2. The Goods shall be packed in such a way as to prevent damage and/or destruction during the delivery period before acceptance of the Goods.</p> <p>5.3. The Supplier shall deliver the Goods in the original packaging, which shall meet the requirements for this type of Goods when transported by the selected mode of transport to the agreed destination.</p> <p>5.4. The labelling applied to the packaging shall correspond to the nature of the Goods and contain the name and quantity of each unit of the Goods separately.</p>	
<p>Lot No.3 /: Fluorescence Wave Dispersion Spectrometer</p> <p>1.1. Use of equipment for analysing elemental composition from oxygen to uranium.</p> <p>2. Components and technical requirements of the fluorescence wave dispersion spectrometer</p> <p>The equipment shall have all the necessary modules and consumables to get started.</p> <p>2.1. The fluorescence wave dispersion spectrometer shall have the following technical characteristics:</p> <ul style="list-style-type: none"> - X-ray tube – Pd – anode; - generator power 200 W; - tube - 50 kV, 4 mA; - air cooling; - primary radiation filter – Zr (standard), Al – (optional); - analysing crystals – Lif (200) and PET (standard), RX 25 and Ge (optional); - detectors – proton-proportional, scintillation 	<p>1</p>

2.2. Fluorescence wave dispersion spectrometer shall have:

- PC (Windows 10);
- A4 laser printer;
- holder for solid samples;
- crystal for the analysis of elements from oxygen to magnesium;
- software for quantitative analysis by the method of fundamental parameters;
- software for semi-quantitative analysis without the use of standard samples, including recalibration samples;
- automatic sample changer (turret), at least 10 sample positions;
- counting system controller;
- vacuum system and vacuum pump;
- helium purge system of the analytical chamber;
- temperature stabiliser for the goniometer and sample chamber;
- gas flow stabiliser;
- gas supply system;
- X-ray switch-on lamp;
- three-position automatic changer of analysing crystals;
- control and data processing software

3. Device software requirements

The software shall have the following options:

- SQXFP software;
- compliance library;
- SQX scatter FP method;
- correction for fusion;
- correction for overlapping lines using the calculation

4. Requirements for commissioning and personnel training

4.1. It is necessary to carry out commissioning and start-up of the device, train and instruct personnel by a certified specialist at the location of the equipment, and issue relevant training certificates.

4.2. The device shall be calibrated in accordance with the requirements of UA State Standard ISO EN 17025.

Calibration shall be performed after the device is put into operation and a calibration certificate shall be provided.

4.3. The Supplier company shall have a service department and employees with appropriate qualifications (service engineers) in Kyiv or Kyiv region who have the necessary knowledge and experience to install, adjust the equipment and ensure the uninterrupted operation of the device during the warranty and post-warranty periods.

4.4. The device shall be supplied with the instruction manual for maintenance and operation of the equipment in Ukrainian or Russian or English with translation previously indicated languages.

4.5. The period of full warranty service of the device shall be at least 12 months, excluding consumables and wearing materials.

4.6. It is necessary to provide post-warranty service throughout the entire service life of the device (confirmed by a letter from the manufacturer or its official territorial representative).

4.7. The period of guaranteed production of spare parts and consumables for the device shall be at least 5 years (confirmed by a letter from the manufacturer or its official territorial representative).

<p>5. Terms of supply</p> <p>5.1. The Goods shall be delivered by the supplier's vehicles at its expense on DDP terms to the address of the equipment location.</p> <p>5.2. The Goods shall be packed in such a way as to prevent damage and/or destruction during the delivery period before acceptance of the Goods.</p> <p>5.3. The Supplier shall deliver the Goods in the original packaging, which shall meet the requirements for this type of Goods when transported by the selected mode of transport to the agreed destination.</p> <p>5.4. The labelling applied to the packaging shall correspond to the nature of the Goods and contain the name and quantity of each unit of the Goods separately.</p>	
<p>Lot No.4 /: Penetrometer for Petroleum Products</p> <p>1.1. Use of equipment to determine penetration for petroleum products</p> <p>2. Components and technical requirements of the penetrometer</p> <p>The equipment shall have all the necessary modules and consumables to get started.</p> <p>2.1. Penetration measurement range * 0 to 630 penetration units</p> <p>precision characteristics:</p> <p>Displacement meter error of max. ± 0.1 mm</p> <p>Determines the penetration value with an error of no more than ± 0.05 mm.</p> <p>Penetration time from 1 to 3599 s (penetration time in 1s increments);</p> <p>Delay time before performing the penetration from 0 to 3599 s (delay time before performing the penetration in 1s increments)</p> <p>Table movement speed from 0.02 to 5 mm / s</p> <p>operational characteristics</p> <p>Power consumption no more than 50 W</p> <p>Overall dimensions 280 x 245 x 505 mm, (depth x width x height)</p> <p>Ambient air temperature from +15 to +35° C</p> <p>Relative humidity from 75%</p> <p>Voltage from 187 to 242 V</p> <p>Frequency 50 \pm 1 Hz</p> <p>Service life 6 years, no more than 15,000 hours</p> <p>Warranty period 1 year, no more than 2,500 hours</p> <p>Safety</p> <p>Sound support Sound signal at the end of the test, malfunction detection</p> <p>Diagnostics and adjustment Built-in self-diagnostic and adjustment algorithms, user notification of malfunction causes</p> <p>Built-in illuminator and magnifying glass to help determine when the needle touches the bitumen surface.</p> <p>Provides storage of up to 9 test results with calculation of their average value.</p> <p>Data collection and transfer of laboratory test results from the device to a PC via wireless communication.</p> <p>Equipped with a liquid bath with a heat exchanger for connecting</p> <p>Thermo sryostats</p> <p>Table movement control in three modes: slow table lift, fast table lift, fast table return.</p> <p>Display in standby mode: number of the last test performed; set number of tests; table lifting speed; set penetration time; set pause.</p> <p>Display during the test: number of the last test performed; set number of tests; penetration time (countdown); current penetration value.</p>	<p>1</p>

2.2. The penetrometer shall have:

Calibration rod, 63 mm 1 pc

Calibration rod, 40 mm 1 pc

Calibration rod, 50 mm 1 pc

Test rod 1 pc

Plate 1 pc

Level, L <400 mm 1 pc

Penetrometer bath 1 pc

Perforated stand 1 pc

Insulating pad 1 pc

Cup, 35 mm 5 pcs

Cup, 60 mm 5 pcs

Handle 1 pc

Needle 10 pcs

Weight, 50 g 1 pc

Weight, 150 g 1 pc

Operating manual 1 pc

Passport 1 pc

Passport for calibration rods 1 pc

Programme and method of attestation 1 pc

3. Device software requirements

The software shall have the following options:

- SQXFP software;

- compliance library;

- SQX scatter FP method;

- correction for fusion;

- correction for overlapping lines using the calculation

4. Requirements for commissioning and personnel training

4.1. It is necessary to carry out commissioning and start-up of the device, train and instruct personnel by a certified specialist at the location of the equipment, and issue relevant training certificates.

4.2. The device shall be calibrated in accordance with the requirements of UA State Standard ISO EN 17025.

Calibration shall be performed after the device is put into operation and a calibration certificate shall be provided.

4.3. The Supplier company shall have a service department and employees with appropriate qualifications (service engineers) in Kyiv or Kyiv region who have the necessary knowledge and experience to install, adjust the equipment and ensure the uninterrupted operation of the device during the warranty and post-warranty periods.

4.4. The device shall be supplied with the instruction manual for maintenance and operation of the equipment in Ukrainian or Russian or English with translation previously indicated languages.

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Thank you and we look forward to receiving your quotation.

Issued by:

Signature: _____

Name: VICOL Marin

Title: Procurement Specialist

Date: 20.03.2024