# *ANNEX II + III:* TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

**Contract title: Supply of laboratory equipment for the project MICROPLASTICS p 1/13**

**Publication reference:** **HUSRB/23R/12/089-2/laboratory equipment**

**Columns 1-2 should be completed by the contracting authority**

**Columns 3-4 should be completed by the tenderer**

**Column 5 is reserved for the evaluation committee**

Annex III - the contractor's technical offer

The tenderers are requested to complete the template on the next pages:

* Column 2 is completed by the contracting authority shows the required specifications (not to be modified by the tenderer),
* Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words ‘compliant’ or ‘yes’ are not sufficient)
* Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offeredspecifications.

**Lot no. 1 – Manta, ultrasonic bath, Microwave digestion system and consumables**

| **1.****Item number** | **2.****Specifications required** | **3.****Specifications offered** | **4.** **Notes, remarks, ref to documentation** | **5.****Evaluation committee’s notes**  |
| --- | --- | --- | --- | --- |
| **1** | **Manta trawl net with digital flow meter** with next characteristics – **2 pcs**:- Net Length minimum 350 cm- Manufactured from marine- grade aluminium. - Net length: 350 cm.- Mesh size 300 μm; other sizes on request. - Mechanical flow meter and bracket.- Buoyancy to sample on the water surface.- Includes net bucket, diameter Ø80 mm.- Digital flow meter, without back- 2 run stop. Weight 0,5 kg.- Recommended for horizontal pull.- Bracket for flow meter. AISI 316 stainless steel. Supports flow meter. |  |  |  |
| **2** | **Stainless steel sieves** with next characteristics – **6 pcs**:- Sieves 1 – 2 pcs- 400 mm diameter - useful height 65 mm - Mesh width 5.6 mmSieves 2. 2 pcs- 400 mm diameter - useful height 65 mm - Mesh width 1 mmSieve 3. 2 pcs- 400 mm diameter - useful height 65 mm - Mesh width 300 µm |  |  |  |
| **3** | **Ultrasonic Bath** with next characteristics – **1 pc**:- Operating frequency: min 40KHz- VF power: min 300/600W- Power supply: 220V/50Hz- Timer: min 0÷30 minutes- Temperature: min 0÷80ᵒC (standard up to 70ᵒC)- Heater power: min 400W- Minimum height 200 mm- Bowl material: Stainless steel Cr Ni 18/10 according to EN631- Volume from 12.5 to 15 litter |  |  |  |
| **4** | **Membrane vacuum filtration with vacuum pump** with next characteristics – **1 pc**:- Laboratory Filtration Manifold with 6 position - Material of manifold need be SS316 stainless steel - Detachable hose barb can be connection to either side of the manifold quickly towards the vacuum source Vent Valve integrated with the pipe - Silicon Soppers - SF Stainless Steel Funnel 500ml x 6 pcs - Stainless Steel Cover for 500ml SF Funnel x 6 pcs Body, control valve, hose barb/vent valve need be from SS316 material - Handle/Knob need be from Aluminium - Diaphragm Liquid Pump for transfers the filtered liquid directly to west, No air pollution, CE, UKCA, RoHS Certificate, IP 64, Compliant with ISO 8199, Max vacuum 313 mbar, maximum liquid flow rate 5 L/m, Motor 50W Brushless DC Motor |  |  |  |
| **5** | **Device for measuring disolved oxygen concetration** with next characteristics – **1 pc**:- Automatic calibration up to two points 0% - 100% - Automatic compensation of temperature and barometric pressure, manual salinity - Measurement stability indicator and possibility to select 3 stability levels - Color LED monitor - Polarography sensor cable length 3 m - O2 dissolved Measuring range 0 to 14 - Resolution minimum 0.01 for <20 mg/L, minimum 0.1 for >20 mg/L- Accuracy minimum 1.5% full scale O2 saturation Measuring Range 0.0 to 199.9% - Resolution 0.1% - Barometric pressure measuring range from 0 to minimum 1100 mbar-a- Temperature Measuring Range from -10 to 110°C- Pressure and temperature compensation automatic - IP 57 protection - Power 3 batteries AA1.5 |  |  |  |
| **6** | **Microwave digestion system** with next characteristics – **1 pc**:- Microwave Power: minimum 1000W- Temperature Control Range in minimum range from 50 to 400°C- Temperature Accuracy: ±0.1°C- Contactless IR Sensor Temperature Monitoring - Pressure Monitoring Contactless Sensor Pressure Monitoring - Pressure Controlling Range minimum from 0 to 15 MPa- Pressure Accuracy: ±0.01 MPa- Vessel Volume 100 mL - Sample Vessel Material Imported TFM - Protection Vessel Material PEEK + Glass Fibber - Display 7 inches Touch Screen - Microwave Cavite 316L stainless Steel - Minimum 6 position of rotor - High Power Corrosion proof air blower - Microwave leakage < 5 mW/cm2- IR sensor and pressure sensor - Real time display the temperature and pressure of sample solution - Pre – Installed multiple international application methods - Professional electromagnetic protection design compatible with high level microwave leakage protection standard- Rotor Capacity 6 vessels - Volume of vessel 100 mL - Vessel Material TFM- 6 pcs Digestion Vessels |  |  |  |
| **7** | **Portable cooled wastewater sampler** with next characteristics – **1 pc**:- Enclosure: PE/PC (GF10) Double walls, insulated bottom Thermostatic. control: Compressor cooling (12 V/115 V/230 V) - Commands: Microprocessor control, keyboard under foil, backlight Option: LAN/GPRSUMTS/ Web communication (100 MB, 2 years of memory FIFO inter. 1 min.) 12 programs, friendly software - Interface: MiniUSB, RS 232, optional: Ethernet RJ45, SDI-12Signal outputs: 8 digital outputs, 1x of them as collective error message - Sampling methods: Vacuum 40–300 ml/Peristaltic pump 40–10,000 ml - Suction height: up to 8.5 m (at 1,013 hPa) - Pumping speed: more than 0.5 m/s at a suction height of up to 5 m (at 1,013 hPa)- Suction hose: PVC. hose length minimum 20 m UP= minim 20 mm- Sampling modes: Time, flow, event-related and manual sampling - Option: variable sampling proportional to flow Bottle variants: 24 x 1 L PE - Power supply: Sampler 12 V/12 Ah/charger 230 V- Ambient temperature: 0 to +50°C - Sample temperature: 0 to +40°C - Standards: CE, sampling according to standards ISO 5667-10, EN 16479 |  |  |  |
| **8** | **Consumables** with next characteristics – **1 set**:Standard reference material2 digital burettes of 50 mL2 acid-resistant dispensers20L glass flaskSteel sieves for perforations, 1mm, 330, 50, 20, sieve diameter 25-30cmGlass syringe bottles 5 piecesGlass Beaker 2L – 10 piecesGlass Beaker 1L - 10 piecesGlass Beaker 500ml – 10 piecesGraduated glass pipettes 1mL - 10 piecesGraduated glass pipettes 5 mL - 10 piecesGraduated glass pipettes 10 mL - 10 piecesGraduated glass pipettes 20 mL - 10 piecesGraduated glass measuring cup 50 mL - 10 piecesGraduated glass measuring cup 100 mL - 10 piecesGraduated glass measuring cup 500 mL - 2 piecesGraduated glass measuring cup 1L - 2 piecesGlass syringe - 10 piecesSyringe filters PTFE, pore size 0.2 - 100 piecesSyringe filters GF/f, pore size 0.2 - 100 piecesSyringe filters GF/f, pore size 0.45 - 100 piecesSyringe filters GF/f, pore size 1 - 100 piecesPetri dishes small - 30 piecesPetri dishes large - 30 piecesWhite or transparent nitrile gloves - 500 piecesCotton coat x 20Paper ballpoint pens x 20Paper stickers x 20Notebooks without plastic x 20FeSO4 x 7 H2O, minimum 99% pure, 250 gcc H2OSO4, 95-98%, 1 L30% H2O2, 2LNaCl minimum 99% pure, 1 kgEthanol minimum 95% pure, 2L |  |  |  |
|  | **Delivery**Chemicals must be delivered to Public Health Institute Sombor, Vojvođanska 47, 25101 Sombor |  |  |  |
|  | **Warranty period**Min. warranty period is 24 months from the date of delivery |  |  |  |

**Lot no. 2 - FTIR-ATR microscope**

| **1.****Item number** | **2.****Specifications required** | **3.****Specifications offered** | **4.** **Notes, remarks, ref to documentation** | **5.****Evaluation committee’s notes**  |
| --- | --- | --- | --- | --- |
| **1** | **FTIR-ATR microscope** with next characteristics – **1 pc**:The solution must include an FTIR microscope coupled to an FTIR spectrometerThe microscope must include a MCT detector covering the range 7000-570 cm-1The system  must allow spectra collection from sample on the microscope stage and on the FTIR sample compartmentThe IR source must be inside the spectrometerThe equipment must be controlled by a unique software, without several software modules.Microscope and spectrometer must have a real-time atmospheric correction featureAn interferometer without need of dynamic alignment correction will be preferredThe microscope must have a motorized sample stage |  |  |  |
| The microscope must have transmission, reflection and micro-ATR mode. Switch from a mode to another must be controlled by the software without any handling of optical componentsThe microscope must accept sample height up to 3 cm in reflectance or micro ATR mode to allow customized sample holders..When using micro-ATR, switch from visible to IR mode must automatically done without manually inserting or removing the crystal from the beam.Pressure on micro-ATR must be controlledThe spectrometer must have a diamond ATRA polymer library must be providedThe microscope must be upgradable to multipixel detectorPC and monitor 24 inchLibrary with minimum 20.000 componentsDewars designed for storage and transport of Liquid Nitrogen 50L |  |  |  |
|  | **Delivery**Chemicals must be delivered to Public Health Institute Sombor, Vojvođanska 47, 25101 Sombor |  |  |  |
|  | **Warranty period**Min. warranty period is 24 months from the date of delivery |  |  |  |

**Lot no. 3 – Laboratory fridge, Evaporation system and Automated SPE System**

| **1.****Item number** | **2.****Specifications required** | **3.****Specifications offered** | **4.** **Notes, remarks, ref to documentation** | **5.****Evaluation committee’s notes**  |
| --- | --- | --- | --- | --- |
| **1** | **Laboratory fridge** with next characteristics – **1 pc**:Purpose of the equipment is storage of samples and all chemicals that have prescription to be stored in the refrigerator. Volume: 520 l ± 10 %Temperature range: 0 … +15°C maximumInterior material AISI 304 Stainless steelExternal finishes Epoxy powder coatingRefrigerant Gas R290Climate Class SN/ST |  |  |  |
| **2** | **Evaporation system** with next characteristics – **1 pc**:Evaporation system of solvents from any sample vessel System need accelerates the concentration of large numbers of samples in a matter of minutes, where traditional methods can take hours. Evaporation is increased by passing an inert gas over the surface of the sample to remove any evaporated solvent molecules, maintaining the concentration gradient. The gas travels through the unique patented gas chamber to the samples via the needles. The needles are inserted into a silicone matrix and can be spaced to fit varying combinations of tubes from 26mm tubes to 0.2ml microcentrifuge tubeMaximum gas pressure must not exceed 2 psi |  |  |  |
| Maximum vertical travel 320 mmMaximum gas usage 15 l minuteGas any inert gas Gas intake nozzle diameter need be minimum 6 mmNeedle position variable Digital heating block with 2 blocks Work range of block need be from 5 to minimum 100 °CResolution of temperature need be minimum 0.1°CDigital heating block need have LED displayMaximum timer 99hr to 59 minAudible alarm Minimum 24 position of vial |  |  |  |
| **3** | **Automated SPE System** with next characteristics – **1 pc**:Solid phase extraction (SPE) system for eliminate cross contamination with minimum 20 positionsDisposable, quick-replace valve liners ensure a clean flow path and eliminate cross contamination of samples extracted on the same port.• Individual screw-type valves in each SPE port provide precise flow control.• Easily modified sample collection rack supports a wide variety of collection vessels.• Solvent-resistant vacuum gauge and bleed valve offer better sealing and vacuum control.• Valves are compatible with any standard male luer end SPE cartridge.Quick-Replace vacuum manifolds enable analysts using solid |  |  |  |
| Solid phase extraction (SPE) cartridges to simultaneously prepare up to 20 samples. These manifolds are designed to eliminate the risk of contamination when consecutive samples are extracted in a manifold port. They are equipped with integral flow control valves, and each valve has an inexpensive, disposable PTFE liner/solvent guide running through its length. This guide acts as a liner so that all surfaces that come in contact with a sample can be discarded and replaced following each extraction. A luer hub attached to the PTFE liner fits snugly into a matching slot on the flow control valve stem. As the SPE cartridge is rotated on its axis, the valve pinches or releases the liner, stopping or starting the flow. |  |  |  |
| Vacuum Pumps with minimum flow capacity 20 L/min• PTFE wetted parts are highly resistant to corrosive gases.• Diaphragm-based pump is low maintenance and virtually pollution free.• Quiet, low-vibration units keep disturbances to a minimum.• Built-in thermal protector automatically shuts off pump if it overheats and then restarts it once the unit is cool.• International CE and CSA certification.• Applications include vacuum filtration, gel electrophoresis, solid-phase extraction, solvent purification, and general use.Cover with flow control valves & gasket Collection Rack Plate for 16 mm test tubes Quick Replace liners, PTFE 100 pc , Liner guides 24 pcTest tubes 24 pcSPE Cartridges 300 pcs, C18 monofunctional mid-load, 6 ml, 500 mg |  |  |  |
|  | **Delivery**Chemicals must be delivered to Public Health Institute Sombor, Vojvođanska 47, 25101 Sombor |  |  |  |
|  | **Warranty period**Min. warranty period is 24 months from the date of delivery |  |  |  |