

The Systems for Sample Collection and Conservation

include numerous equipment which can be used for sample preparation depending on the type of environment from which the samples were collected (water, soil, air, biota) and on their composition. The preservation of the samples, which may or may not have been previously prepared for further analysis, can be done by:

- refrigeration;
- freezing;
- biological and sediment sampling;
- aerosols sampling;
- meteorology;
- air quality measurements;
- mobile measurements of air quality parameters.

The Systems for Sample Collection and Conservation

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The Systems for Sample Collection and Conservation

Equipment:

Laboratory freezer MDF-MU549DH-PE, PHCBI (Panasonic)

Uses:

- the preservation of raw samples, of samples prepared for analysis, but also for the preservation of chemical reagents and analysis standards.

Technical specifications:

- two independent chambers for which the cooling temperature can be set independently of each other;
- temperature setting range starting in the range $-180^{\circ}\text{C} \div -450^{\circ}\text{C}$;
- digital display with temperature display;
- volume of approx. 480 L;
- temperature control by microprocessor;
- temperature sensor: thermistor;
- external and internal construction: coated steel (painted) or stainless steel;
- alarms for: temperature deviations and power failures.



The Systems for Sample Collection and Conservation

Equipment:

Laboratory refrigerator MPR-S500H-PE, PHCBI (Panasonic)

Uses:

- the preservation of raw samples, of samples prepared for analysis but also for the preservation of chemical reagents and analysis standards.

Technical specifications:

- temperature control range in the range $+2^{\circ}\div+14^{\circ}\text{C}$;
- volume of approx. 550 L;
- external and internal steel construction with coating (painted) or stainless steel;
- temperature control by microprocessor;
- 2 sliding stick doors;
- temperature sensor: thermistor;
- cooling by forced air circulation;
- alarm in case of temperature deviations.



The Systems for Sample Collection and Conservation

Equipment:

Portable dear grab, Van Veen Grab 250 cm², KC Denmark

Uses:

- collecting samples from watercourses with a sandy or silty substrate;
bottom sediment dredging for collecting samples of sediment and aquatic macroinvertebrates.

Technical specifications:

- sample surface: 250 cm² - 4 covers
- sample: 3.14 L
- dimensions: 20 x 20 x 70 cm
- covers: 60 x 70 mm each. 4 pieces
- materials: AISI 316 stainless steel.
- grip = 3 mm
- max. operational weight: 10.1 kg incl.
- lead weights 4 x 1.0 kg (standard delivery);
- supplements: 4 caps.



The Systems for Sample Collection and Conservation

Equipment:

Rectangular dredge, 19,600, KC Denmark

Uses:

- bottom sediment dredging for collecting biological and sediment samples.

Technical specifications:

- opening of 40 x 20 cm (W x H);
- material: 3 mm AISI 316 stainless steel plate;
- nylon mesh bag, length 50 cm, standard mesh size: 500 μ m;
- $\text{\O}10$ mm stainless steel guide arms;
- weight: 8 kg;
- mouth dimensions, L x H: 40 x 20 cm;
- net length: 50 cm;
- total dimensions, L x H x W: 105 x 25 x 43 cm.



The Systems for Sample Collection and Conservation

Equipment:

Electronarcosis equipment, FEG 8000, EFKO – Elektrofischfanggerate GmbH

Uses:

- Monitoring ichthyofauna related to aquatic ecosystems - rivers and lakes.

Technical specifications:

- Honda 1-cylinder 4-stroke engine, running on unleaded gasoline, power 9.56 kW (13.0 hp) at 3600 rpm;
- safety system for engine oil level, with automatic engine shutdown;
- external capacity - output power: 8000 Watt.



The Systems for Sample Collection and Conservation

Equipment:

Planktonic net, model 23,000, KC Denmark

Uses:

- collecting samples of plankton from lotic and lentic watercourses.

Technical specifications:

- diameter 25 cm;
- length 40 cm, mesh of the bag 200 μm ;
- equipped with cylinder with valves diameter 32 mm;
- container volume 35 cm³;
- weight 0.7 kg, bridle length 40 cm.



The Systems for Sample Collection and Conservation

Equipment:

Set of benthic sieves, model 26.125; 26.100;261XX, KC Denmark

Uses:

- washing and sorting benthic macroinvertebrate samples as well as other types of biological samples.

Technical specifications:

- stainless steel mesh, stackable, 20 x 40 cm, mesh size 1000 μm ;
- dimensions 40 x 20 x 7 cm;
- weight 1.55 kg;
- stainless steel mesh, stackable, 20 x 40 cm, mesh size 500 μm ;
- dimensions 40 x 20 x 7 cm;
- weight 1.55 kg.



The Systems for Sample Collection and Conservation

Equipment:

Benthic net, model 15,000, KC Denmark

Uses:

- sampling benthic macroinvertebrates from the water table and bottom sediment.

Technical specifications:

- aisi 316 stainless steel frame, 2 x 50 mm;
- square opening of 25 x 25 cm;
- mesh size: 500 μ m;
- reinforced beaver nylon edge;
- finish: electro polished and acid hardened varnish;
- net length: 50 cm;
- total length: 180 cm;
- weight: 1.5 kg.



The Systems for Sample Collection and Conservation

Equipment:

ATM_16 Sampling pump with aerosol filters, CF-1000BRL, HI-Q

Uses:

- air quality monitoring, aerosol sampling based on filters.

Technical specifications:

- flow rate: minimum range 60-230 LPM;
- adjustable volume;
- filtering PM10, PM2.5 type particles;
- electronic display;
- continuous monitoring;
- motor/pump: 2-stage brushless centrifugal blower.



The Systems for Sample Collection and Conservation

Equipment:

ATM_19 Balloon for vertical atmospheric measurements, model 10kg payload Aerostat, r Aero Drum Ltd

Uses:

- air quality monitoring at high altitude.

Technical specifications:

- ellipsoid shape;
- polyurethane material or other material with equivalent properties;
- minimum lifting capacity of 10 kg;
- maximum operating and control height: 10 km;
- GPS positioning system (XYZ);
- safety valve;
- inflation and deflation system;
- material permeability: maximum 0.05% per day;
- vertical stabilizer sail;
- self-stabilization system in windy conditions.



The Systems for Sample Collection and Conservation

Equipment:

ATM_20 Multirotor drone with 8 motors

Uses:

- mobile measurements of air quality parameters and meteorological parameters at altitudes of up to 3 km;
- monitoring of air quality and atmospheric pollution in hard-to-reach areas;
- studying the composition and state parameters of the atmosphere vertically.

Technical specifications:

- complete autopilot (IMU, GPS baro - Galileo, Glonass, Navstar, Beidou) and magnetometer with redundancy on all sensors;
- digital video link via the remote control and front navigation video camera;
- data link (ethernet, serial) between the drone and remote control;
- telemetry on the remote control and on the laptop with the possibility of programming the mission (route);
- useful flight ceiling: maximum 3100 m altitude;
- recommended payload: minimum 12 kg;
- maximum load: 25 kg;



The Systems for Sample Collection and Conservation

Equipment:

ATM_20 Multirotor drone with 8 motors

Technical specifications:

- clamping system for different loads adaptable to different dimensions with the possibility of power supply and connection to the logical interface;
- flight time without load: minimum 60 minutes with a charged battery;
- radio control distance: minimum 15 km;
- ability to perform the RTL/RTH safety measure or equivalent to return the drone at the launch point in case of failure;
- professional radio control station (remote control) on the ground with telemetry and video;
- 8 Motor Multirotor Drone Accessories:
- transport box adapted for the size of the drone;
- software for monitoring, configuration, flight planning and drone configuration;
- 1 set (4 pairs) of spare propellers;
- batteries for the drone - 3 pieces;
- rapid battery charging station (under an hour)
- drone with cell swing: 2 pieces.



The Systems for Sample Collection and Conservation

Equipment:

ATM_47 Portable weather station, model KESTREL5000, NIELSEN-KELLERMAN

Uses:

- monitoring weather parameters in the field or in hard-to-reach areas where these values are needed in correlation with other parameters determined with other equipment and research systems.

Technical specifications:

- bluetooth connection;
- digital display;
- determined parameters:
 - temperature, resolution: 0.1°C, accuracy: 0.5°C;
 - relative humidity, resolution: 0.1%RH, accuracy $\pm 2\%$ RH;
 - pressure, resolution: 0.1 hPa, accuracy: ± 2 mbar;
 - wind speed, resolution: 0.1 m/s, accuracy: 5% of the reading;
 - degree of protection: minimum IP65;
 - battery use: minimum 100 hours.



The Systems for Sample Collection and Conservation

Equipment:

ATM_48 Gimbal three-dimensional stabilizer

Uses:

- mobile foto-video of fauna, monitoring applications, or even as a stabilization platform for optical equipment.

Technical specifications:

- keeps the subject in focus while moving, allows precise real-time focus time control of $\pm 0.02^\circ$;
- minimum 3 axes;
- cable or Wi-Fi connection;
- supports a load of at least 3 kg;
- autonomy: 10 hours.

