**DETAILED TECHNICAL SPECIFICATIONS FOR SELECTED ITEMS**

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# GENERAL INSTRUCTION

1. **Installation and Maintenance:**

Each bidder has to deliver install the equipment through certified / qualified personnel at the place indicated. The detailed installation prerequisites have to be communicated to the purchaser in advance, especially for the electric power supply needed including type of plug (or other way of connection) and adequate plumbing, size of fittings, exhaust connections and so on.

A detailed instruction of the laboratory personnel on use, function and maintenance of the equipment (user training) as well as a comprehensive maintenance plan (log-book for daily, weekly, monthly and quarterly maintenance checklist) is part of this procurement.

The cost of the maintenance plan should be defined and guaranteed over the period of warranty

The supplier shall have a functioning after sale service covering countries of use as mentioned in the bud document, including adequate infrastructure, competent and adequately staffed personnel with adequately provisioned spare part store allowing to respond to any complaints and to repair/replace the equipment within 14 days of receipt of complaint.

1. **Manufacturer’s Certificate** under which the equipment is produced **and Quality and Safety standards** met by the product offered have to be listed

Manufacturer must have a management system certified to ISO 9001 or equivalent. Please indicate in front of Manufacturer certificate cell under which certification each item is produce.

1. **Standard Maintenance Tools:**

All standard accessories, consumables, parts required for the proper operation and all standard tools, cleaning and lubrication material shall be included in the offer. Each bidder has to specify the quantity in its offer of every item or items not specified above.

1. **Spare Parts:**

Each equipment should be accompanied by an authorized list of accessories and spare parts

1. **Supply Voltage:**

Equipment needs to work with European or US voltage. Please specify if it is not the case

1. **Remarks:**

The design and workmanship of equipment offered, including power supply, has to be suited to operate properly and continuously under all climatic conditions, especially humidity (e.g. <90% at 35°C), permissible ambient temperature (e.g. +5°c to +40° C), protection against fungi, and possible spikes in the electric network.

Each bidder may propose any system / product in addition to the requirements listed above.

# GENERIC ITEMS

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| **NAME OF EQUIPMENT:** PCR Workstation (106045) | | CODE NUMBER 106045 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This workstation is used to prepare reagents under clean conditions to avoid contamination with DNA. | | |

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| **MAIN SPECIFICATIONS:** |  |
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| Exterior dimensions (H X W X D) approx.: 700 x 750 x 600 mm |  |
| Interior working area (W x D) approx.: 700 x 500 mm |  |
| Exterior: Stainless steel or powder coated metal |  |
| Interior made of stable formed stainless steel |  |
| Side panels transparent (no acryl, safety glas preferred), able to absorb wavelengths below 400 nm |  |
| Overhead UV light for DNA decontamination, at least two lamps, 25 W each |  |
| Separate switchable, UV/Air Sterilizing Circulation unit, UV lamp 25 W |  |
| Timer and key lock for UV lamp, timer operates only when key lock is on |  |
| Overhead white light, 15 W at least 800 lux |  |
| At least two plug outlets built into the chamber, AC 230 ± 10V, 50 Hz and 5A fuse |  |
|  |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: Mainly depending on the electrical equipment used inside the work station, max. 1200 W |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
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| **Manufacturer’s Certificate** |  |

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| **NAME OF EQUIPMENT:** Water Distiller, 4 Litres per Hour (106127) | | CODE NUMBER 106127 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function:** | |  |
| Quality of water is critical for quality of reagents, solutions and culture media in the laboratory | | |
| Remarks. Fully automated distillers need a constant water supply of sufficient pressure (usually 3bar). If the pressure at the entrance of the laboratory exceeds 5 bar, it should be regulated down to about this value.  If the water pressure in the laboratory is low (less than 2 bar) or fluctuating, a simple manual distiller tap water can be used, it needs steady observation. | | |

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| **MAIN SPECIFICATIONS**: |  |
| Water distilling apparatus with a capacity of at least 4 litres per hour |  |
| Wall mounted distiller |  |
| Double-walled housing, outer housing made of sheet steel, protected against rust (e.g. by galvanised steel subsequently powder-coated with epoxy resin) |  |
| All parts in contact with steam or distilled water shall be made of high quality stainless steel |  |
| Built in storage tank for distilled water of about  8 litres |  |
| Cooling coil easily accessible and exchangeable |  |
| Water supply connected through a built-in solenoid valve with sufficient cross section (hose at least ½ inch) |  |
| Water level regulator switching off heating and cooling water supply when storage tank is full |  |
| Restart automatically when distillate is withdrawn |  |
| Electronic detector of impurities in the evaporator with switch off |  |
| Indication of shut down (e.g. sound, flickering light or comparable alarm) |  |
| Evaporator should have an easily accessible drainage cock with hose |  |
| Heating elements made of stainless steel |  |
| Integral filter and flow control system |  |
| Power cut off in case of water supply shortage |  |
| Distillate shall comply to the International Pharmacopoeia, be pyrogen free, conductivity ≤ 2.3µS/cm at 20°C |  |
| Net weight approx. 20 kg |  |
|  |  |
| **Manufacturer’s Certificate** |  |
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| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: Approx. 3 kW |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Accessories:** |  |
| Electric conductivity meter (If not integrated into the distiller apparatus) to be mounted at the withdraw point of distillate |  |
| Hose and claps needed for installation |  |
| Additional storage tank, if larger amounts of water are needed per day |  |

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| **NAME OF EQUIPMENT:** Biosafety Cabinet Class II A | | CODE NUMBER 106076 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
|  | |  |
| **Photo of item :** | | |
| **Description of function:** | |  |
| This BSC is used in a TB-laboratory for processing specimens consisting of liquefaction of sputa and handling cultures of tubercle bacilli. This type of BSC is not adequate for handling volatile, or toxic chemicals or radionuclides.  Before ordering a BSC, facility and engineering requirements have to be checked.  The organization of a periodical re-certification of the BSC by an authorized agency should be in place.  The two filter version will be adequate when the exhaust air of a BSC used for Drug Susceptibility testsing (DST) and/or handling of TB cultures is ducted out.  If in a facility the exhaust air from a BSC used for DST/handling of TB cultures will not be ducted out but re-circulated to the laboratory room it is advisable to install a second H14 HEPA filter on top of the primary exhaust filter with an appropriate tight fitting frame. All air flow velocities specified below need to be established also for the double exhaust filter version.  An alternative solution would be to place a set of HEPA filter (H14) as “prefilters” into the duct for incoming fresh room air and re-circulated air from the the air down-flow.  This way both the exhaust air and the air of laminar down-flow will be double HEA filtered.  Air flow velocities need to be kept as defined for BSC classII A2  The triple filter BSC usually cannot be separated into two pieces (stand and bodyform one unit). It has to be transported and brought in an upright position into the laboratory room as one piece.  Usually an access of 85 cm X 220 cm will be needed | | |

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| **MAIN SPECIFICATIONS:** |  |
| The BSC should meet the requirements of ClassIIA2 NSF49 or ClassII EN12469, specifically with inward air flow (≥0.40 according to EN 12469:2000 and/or ≥ 0.51 m/s according to NSF 49:2004 |  |
| External height ≤ 2200 mm including support stand allowing an available space of at least 400 mm from the top of the BSC to the ceiling. Higher versions may be accepted, as far as the 400 mm over the BSC is available to measure air velocity above the exhaust filter and to have enough space for change of filter and for ducting and/or a thimble connection to outlet. |  |
| * **Internal working area approximately:**   1. For a BSC 120 cm (4 feet version): width 1150 x depth 630 x height 650-750 mm  2. For a BSC 150 cm (5 feet version): width 1450 x depth 630 x height 650-750 mm  3. For a BSC 180 cm (6 feet version): width 1700 x depth 630 x height 650-750 mm  120 cm (4 feet) provides the minimal space needed for safe work. |  |
| * Inside finish, stainless steel, high quality (e.g. grade 304) |  |
| External housing made of stainless steel, including crews or equivalent resistant galvanized (zinc-coated) sheet steel, subsequently powder coated and thermally hardened, minimum 80 µm thick, or other material sustainable, resistant to disinfectants, chemicals used in a TB-lab and abrasion resistant. |  |
| * Vertically adjustable sliding window, aerosol-tight sliding, safety glass (laminated multilayer safety glass only), thickness ≥ 6.7 mm, counterbalanced |  |
| * High optical transmission, but absorption of UV light, minimal reflection |  |
| * Working aperture: ≥ 170 mm measured from work surface to the bottom of the sash window |  |
| * Maximal lifting height of front window > 500 mm |  |
| * Ability for locking the window hermetically for gaseous disinfection for filter decontamination |  |
| * Single piece working surface with integrated (V –) shaped front air grill * AlternStavropol, Kathmandu 019atively: Working surface as segments |  |
| Noise pressure level ≤ 60 dB(A) |  |
| **Internal fittings** |  |
| Optional: if a safety gas burner will be used : gas tap with solenoid valve, optional right or left side  For a laboratory located in a seismic area, gas pipes are not recommended, small gas containers (approximately 200 – 400 ml) with butane gas directly fixed to the burner should be used instead.  Not necessary when a micro-incinerator is used. |  |
| 2 electrical sockets, Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country   * Voltage and plugs shall be adapted to those used inside the country. protected with separate T 5 A (slow blow) fuse   Voltage and sockets adapted to those used inside the country.  WARNING: Sockets inside the BSC may differ from the main connection to the electric net if the instruments delivered for use inside the BSC have deviant plugs |  |
| Flicker-free, low-glare, warm coloured light,  > 1000 lux |  |
| * Optional: UVC light (253.7 nm wave length), 30 W with hour counter, with interlock with white light so that the UVC light can be switched on only when the white light source is switched off |  |
| Control display on the BSC front |  |
| * Electrical control / indicators |  |
| * Electronic fan control |  |
| * Flow meter for air inflow velocity |  |
| * Flow indicator/meter for air down-flow velocity |  |
| * Operating hours indicator (counter) |  |
| * Optional: UV light timer |  |
| **Filter and flow conditions** |  |
| * Pre-filter construction preferred: Easy accessible, filter change without tools preferred |  |
| HEPA filter (exhaust air filter), classification at least H14, conform EN 1822, metal framed |  |
| * Air downflow velocity:   **NSF49-2002:**  requires the compliance to the manufacturers' set points or down flow velocity with a deviation of 0.025m/s from nominal set point.  **EN 12469:**  Air flow velocity should be > 0.25 - < 0.50 m/s and is defined by the manufacturer according to the construction. Additionally no individual measurement should differ more than 20% of the value requested by the manufacturer within the limits given |  |
| * Air circulation volume flow:  1. For a BSC 120 cm (4 feet version): 700 - 1200 m³/h 2. For a BSC 150 cm (5 feet version): 1000 - 1500 m³/h 3. For a BSC 180 cm (6 feet version): 1200 - 1900 m³/h |  |
| * Influx air velocity:   According to NSF 49: The average airflow velocity at front aperture should be [0.51 m/s for Class A2  EN 12469 does not differentiate between Class II BSC.The average airflow velocity at front aperture should be at least > 0,4 m/s, according to manufacturers’ specifications |  |
| * Exhaust volume air flow/fresh air flow inward   + For a BSC 120 cm (4 feet version): Volume air flow 300-600 m³/h   + For a BSC 150 cm (5 feet version): Volume flow 400 - 700 m³/h   + For a BSC 180 cm (6 feet version): Volume flow 500-900 m³/h |  |
| * Blower system shall be able to maintain the airflow within a minimum window (narrow limits) on voltage fluctuations. Data should be available on request |  |
| * Alarms, visible and/ or audible for any unsafe condition of the BSC (e.g. airflow, window position, hard- and/or software errors). Possibility to shut down alarm for cleaning and maintenance. |  |
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| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Lead fuse T 16 A (slow blow) or circuit breaker B 16. The electrical regulations valid in the country of use as well as the relevant connection conditions are required |  |
| Power consumption for cabinet: approximately   1. For a BSC 120 cm (4 feet version): 600 W 2. For a BSC 150 cm (5 feet version): 800 W 3. For a BSC 180 cm (6 feet version): 1000 W   Power consumption for plugs inside: approx. 1000 W  Note: In areas with frequent break down of electricity BSCs with low energy consumption can be of advantage. A UPS with lower capacity can be used. |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
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| **Manufacturer’s Certificate** |  |
| The manufacturer shall individually test each BSC before shipment. The test report shall be provided to the customer with a duplicate fixed to the BSC. The tests have to be performed with research grade instruments for valid calibration according to test methods outlined in EN 12469 or NSF 49.  The test report shall contain at least data on:   1. Inflow air velocity 2. Down flow air velocity 3. Filter leak scan for both filters to document filters' efficiency and its integrity |  |
| **Accessories:** |  |
| Table or support frame (support stand) for a  working height 78 ± 2 cm, adjustable at least at three feet (points) to level  A telescopic support stand is advisable for a flexible use |  |
| Air duct construction to hard duct out exhaust air from the BSC or to install a thimble connection. It should be made for the bio-safety cabinet offered and fit precisely. |  |
| Depending on the ventilation system for the containment room, a motorised flap in the hood and a trigger for the external ventilator or equivalent regulatory device may be needed |  |
| All standard accessories/consumables/parts required for the proper installation, operation and maintenance of the BSC shall be included in the offer by the supplier and have to be specified and quantified. |  |
| **Spare Parts:** |  |
| Each assembled BSC should be accompanied by an authorized list of accessories and spare parts |  |
| One, preferably two additional sets HEPA filter as specified above |  |
| WARNING: special clamps may be needed to fix HEPA filter |  |
| Three pre-filters |  |

Supplier of BSC must have the capacity and the qualification to install and certify cabinet at the destination laboratory after delivery. This has to be done in priority in all 27 EXPANDx-TB countries. But it can be requested in every other country where GDF supplies diagnostics.

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| **NAME OF EQUIPMENT:** Uninterrupted Power Supply with battery pack | | CODE NUMBER 106081 – 106443 – New item |
| **Tender specifications** | | Bidder’s specifications |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This UPS has to be used in settings with frequent problems in the electric net (e.g. surges, sacks, spikes, black outs) to assure and backup the function of laboratory equipment to finalize on-going work and to close all potentially infectious sources. If the equipment is connected to a generator, the UPS will maintain the function of the equipment during the time needed for the generator to start and to provide full power.  Three different UPS are required :   * 20 minutes at 700 W (106443) * 20 minutes at 2100 W (106081) * 120 minutes at 700 W (new item) | | |

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| **MAIN SPECIFICATIONS:** |  | |
| UPS microprocessor controlled, line interactive, on line continuous transducer, 20 minutes |  | |
| Booster function to regulate up to normal voltage supply as soon as there is a voltage decrease of 25% |  | |
| Buck function to regulate down to normal voltage supply as soon as there is a voltage increase of 25% |  | |
| Filter to protect against voltage spikes |  | |
| Protection against overload and short circuit |  | |
| Advanced battery check for automated periodic battery inspection |  | |
| Indicators for status like normal function, net down, working on battery, loading battery, battery capacity |  | |
| Sleep mode if consumer is shut off |  | |
| Power: 100 - 230 V +/- 25 %, 50 Hz or 60 Hz (+/- 10 %) with automatic recognition |  | |
| Battery, maintenance-free, automatic shut off before reaching the level of discharge from which recharging to the original capacity will not be possible any more (deep discharge?). |  | |
| Time for recharging: approx. 4 hours to reach at least 90% of total capacity |  | |
| Outlet voltage: 230V +/- 3 %, 50 or 60 Hz +/- 0.5 % (if the country’s standard voltage is 110 V AC adjustment is needed) |  | |
| Changeover time: <5 msec |  | |
| Efficiency coefficient approx. 98 %, on battery >85% |  | |
| Noise at 1 m distance < 48 dB[A] |  | |
| Permissible ambient temperature/relative humidity: 0 – 40 °C/≤ 95 % (not condensing) |  | |
| **Manufacturer’s Certificate** | |  |
| **Electric needs** |  | |
| Protection class in accordance with EN 60529 |  | |
| Circuit radio interference free in accordance with EN 55 014 |  | |
| **Accessories:** |  | |
| Battery pack |  | |
| Connection (cable and fittings) for battery pack |  | |

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| **NAME OF EQUIPMENT:** Mini-shaker | | CODE NUMBER 106219 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This mini-shaker is for use in a BSC. | | |

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| **MAIN SPECIFICATIONS:** |  |
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| Sturdy housing, metal, coated, disinfectable |  |
| Design feature: Flat construction |  |
| Strong orbital movements |  |
| Rotation speed 0 – 2500 rpm  Orbit ≥ 4 mm |  |
| Slip resistant stand: Standing on four rubber feet designed to prevent sliding of the instrument during shaking |  |
| Two operating modes, continuous and touch function |  |
| Head about 20 mm |  |
|  |  |
| Overheating protection |  |
| Permissible ambient temperature/relative humidity: 5 – 40 °C/≤80 % |  |
| Weight. 2.5 – 5 kg |  |
| **Manufacturer’s Certificate** |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country. |  |
| Power consumption: 50 - 100 W |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |

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| **NAME OF EQUIPMENT:** Autoclave | | CODE NUMBER 106116 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| Autoclaves are used for sterilization of infectious materials or for sterilization of clean materials. | | |
| **General remarks:**  Many countries have very strict regulations on the construction, use, maintenance and location of autoclaves within the laboratory department. For sterilization of infectious waste, some countries allow autoclaves with fractionated pre-vacuum or at least pulsed heat up (over pressure pulses) only.  If the autoclave offered needs any additional equipment (e.g. compressor /vacuum pump) then this needs to be mentioned/indicated and added to this offer so that a fully functional unit is provided | | |

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| **MAIN SPECIFICATIONS:** |  |
| Vertical autoclave, universal basic version for microbiological standard laboratory to sterilize liquids, instruments, glassware, plastic articles or general infectious waste |  |
| Single wall construction; chamber, door, door frame, bolts made of corrosion resistant material and able to prevent stress cracking. |  |
| Pressure vessel compliant with International Standards |  |
| Chamber volume, ≥ 70 L |  |
| Heating device (steam generator) horizontally mounted, preferably separated from the chamber with minimal water volume (4 - 7 litre) |  |
| Air being removed by upward displacement |  |
| Automatic water feed, connection to a demineralised water supply |  |
| Integrated pump to equalize pressure variations in external supply lines |  |
| Automatic level control before, during and after the sterilisation cycle |  |
| Low water level cut-out device |  |
| Fast safety lid lock |  |
| Lid lock by a circumferential, durably heat and pressure resistant seal |  |
| Control lock-out switch that prevents starting a cycle if the door is not locked safely |  |
| Control that prevents opening the door until chamber is depressurized |  |
| Temperature dependent door-locking system according to international standard |  |
| Max. operating pressure at least up to 2.5 bar  Max. operating temperature at least up to134 °C (273 °F) |  |
| Sterilisation timer 1 to 250 minutes |  |
| Instrument sterilization timer up to 72 hours |  |
| Timer controlled sterilisation of load at night |  |
| A visual chamber gauge, that easily identifies pressure in the chamber, must be accessible to the operator as a back-up to the control read out, when no electrical power will be available |  |
| Microcomputer control system |  |
| The control panel should be mounted so that the sensitive components to steam and heat are protected. |  |
| Large LCD display showing:  temperature  steam pressure  sterilization time  stage of cycle  alarm information |  |
| Pre-selection of languages for menu-presented instructions at least English |  |
| Protected keyboard with acoustic confirmation signal |  |
| Provide an access code to prevent programming changes of cycle parameters by non-authorized persons. A key lock is not recommended. |  |
| At least 4 program presetting, two for liquids, one for solids, one for waste |  |
| Load capacity: approx. 25 kg waste or 25 kg solid or 20 litre liquid |  |
| Batch documentation; built in printer satisfying GLP and SOP requirements, batch number, date, temperature, pressure and sterilization phase and/or storage device, RS-232 |  |
| Autoclave equipped for pre-vacuum, gravity and flash cycles |  |
| Safety valves, overpressure relief valve |  |
| Low water level interrupt |  |
| Over-temperature, -pressure protection limiter |  |
| Lid interlock |  |
| Alarm, audible with display on dysfunction |  |
| All information on alarm should be in full writing message and not based on a code |  |
| Even with a total control failure, all mechanical safety features must be left intact |  |
| interface RS 232 for direct connection PC, and programmes for conforming documentation, diagrams, storage, print out. |  |
| * **For autoclaves used for waste management (106117):**   Exhaust air filtration with condensate sterilization for emission-free sterilisation of infectious pathogens equipped with filter cartridge of 0.2µm pore size, with easy access for replacement |  |
| * **For autoclaves used in media kitchen (106116):**   + Dual, built in temperature probes (e.g. two PT-100 sensors), one flexible for monitoring accurately sample temperatures to ensure appropriate media or buffer sterilisation   + Device for rapid cooling and (support pressure) |  |
| **Optional**: a manual control that can run a complete cycle manually in case of system failure |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: 3 kW or 4,5 kW |  |
| 16A fuses |  |
| Re-setable over-current breaker fitted for protection |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate** |  |
| Certificates for design and safety regulations |  |
| Quality and Safety standards met by the product offered have to be listed |  |
| One certificate should state that the autoclave has been calibrated at the factory. |  |
| **Accessories:** |  |
| Three Stainless steel wire baskets, diameter and height adjusted that two fit into the autoclave at the same time. (106120) |  |
| Two stainless steel wire baskets, diameter and height adjusted that one fits into the autoclave (106120) |  |
| Three stainless steel buckets with lid, diameter and height adjusted that two fit into the autoclave at the same time (usually 380 x 290 mm) (106119) |  |
| Two stainless steel buckets with lid, diameter and height adjusted so that one fits into the autoclave (106119) |  |
| Optional : Biological indicator |  |
| Optional :Steel stand, appropriately coated for corrosion protection or made from stainless steel |  |
| Optional: In areas with possible earth quakes, this stand must be designed to meet the seismic requirements according to the zone assignment |  |
| Tool to open the autoclave in case of electricity break down (if needed) |  |

Supplier of Autoclave must have the capacity and the qualification to install the instrument at the destination laboratory after delivery. This has to be done in priority in all 27 EXPANDx-TB countries. But it can be requested in every other country where GDF supplies diagnostics.

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| **NAME OF EQUIPMENT:** Inspissator | | CODE NUMBER 106138 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| The inspissator is required for the preparation of egg-based media. | | |

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| **MAIN SPECIFICATIONS:** |  |
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| Housing and chamber made of polished stainless steel |  |
| Temperature range from 5°C above ambient |  |
| Maximal temperature up to 95°C |  |
| Working temperature 85°C |  |
| Temperature deviation ± 0.75°C |  |
| Automatic temperature control and regulation |  |
| Overheating protection and automatic shut off |  |
| Water level sensor.  Instruments with hot air, ventilated or not, through the chamber are not recommended |  |
| Automatic shut off on lowered water level |  |
| Electronic timer 0 – 6 hours |  |
| Capacity > 350 tubes of tubes (16 – 18 mm diameter, tubes, length 125 mm to 160 mm) or universal bottles. |  |
| Racks for tubes in slant position, angle adjustable, covering full capacity of the instrument |  |
| Alarm, audible with display on dysfunction |  |
|  |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: 600 – 3000 W |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate** |  |
| One certificate should state that the inspissator has been calibrated at the factory. |  |
|  |  |
| **Accessories:** |  |
| Optional: Inserts for universal bottles. |  |
|  |  |
| **Spare Parts:** |  |
| One additional set of racks covering full capacity of the instrument for a second batch |  |
| Each inspissator should be accompanied by an authorized list of accessories and spare parts |  |

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| **NAME OF EQUIPMENT:** Conical Plastic Centrifuge Tube, 50 ml | | CODE NUMBER 106340/106341 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |

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| **MAIN SPECIFICATIONS:** |  |
| Material: Quality PP, transparent, free of metal residues and cytotoxic components, non-pyrogenic |  |
| With flat-top screw cap offering positive seal over the whole circumference, tightly closing, leak proof |  |
| Lower margin of the screw cap has to end safely above the surface of the rotor/ bucket insert and should not tough it during centrifugation |  |
| Capacity 50 ml |  |
| Diameter 30 mm |  |
| Length 115 mm |  |
| To withstand relative centrifugal force (RCF) of at least 3200 g **in a swing-bucket rotor** |  |
| Form stability within a temperature range of  -20°C to +130°C |  |
| Autoclavable (121°C) without any deformation |  |
| Graduation at least 2.5 ml |  |
| Frosted (white) writing patch |  |
| Bottom conical (**without** self stand) |  |
|  |  |
| **Shelf life time (for non-sterile tubes):** At least 5 years after month of production |  |
| **Manufacturer’s Certificate** |  |
| **Remarks:**  **For single use only!** |  |

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| **NAME OF EQUIPMENT:** Standard Reaction Tubes, 1.5/2ml (106421/106422) | | CODE NUMBER 106421/106422 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |

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| **MAIN SPECIFICATIONS:** |  |
|  |  |
| Material high purity PP, free of metal residue and pyrogenes |  |
| Transparent, uniform wall thickness |  |
| Screw thread with integrated sealing gasket (for example EPR (ethylene propylene), rubber O-ring or PP/teflon |  |
| Volume 1.5 / 2.0 ml |  |
| Outer diameter ≤10,5 mm |  |
| Has to fit into standard micro-centrifuges (e.g. Eppendorf 5415D), heating blocks and racks |  |
| Graduation scale |  |
| Frosted writing surface |  |
| External vertical rips at the upper part of the vial and at the screw cap |  |
| Withstand relative centrifugal force (RCF) up to 17,000 g |  |
| Autoclavable (121°C) |  |
| Form stability within a temperature range of -80°C to +130°C |  |
| Bottom conical (**without** self-stand) |  |
| **Manufacturer’s Certificate** |  |

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| --- | --- | --- |
| **NAME OF EQUIPMENT:** Microliter-Pipettes - 1-channel pipette | | CODE NUMBER 106072/106075/106053/106054/106055/106056/106057 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | | |
| Microliter pipettes are used for molecular biology steps, a set of different volumes is required | | |

|  |  |
| --- | --- |
| **MAIN SPECIFICATIONS:** |  |
| Single channel microliter pipettes |  |
| Fully autoclavable (121°C), UV resistant material |  |
| Adjustable volume range of each pipette:  a. 0.5 - 10 µl  b. 2 – 20 µl  c. 10-100 µl  d. 20 – 200 µl  e. 100-1000 µl |  |
| Increments :  a. at least 0.1 µl fine adjustment  b, c. at least 0.5 µl fine adjustment (0.1 µl preferred) |  |
| Accuracy according to ISO 8655 :   |  |  |  | | --- | --- | --- | | **Nominal volume** | **Accuracy : Maximum permissible random errors** | | | 1 μl | ± 5.0 % | ± 0.05 μl | | 2 μl | ± 2.0 % | ± 0.04 μl | | 5 μl | ± 1.5 % | ± 0.075 μl | | 10 μl | ± 0.8 % | ± 0.08 μl | | 20 μl | ± 0.5 % | ± 0.1 μl | | 50 μl | ± 0.4 % | ± 0.2 μl | | 100 μl | ± 0.3 % | ± 0.3 μl | | 200 μl | ± 0.3 % | ± 0.6 μl | | 500 μl | ± 0.3 % | ± 1.5 μl | | 1,000 μl | ± 0.3 % | ± 3.0 μl | |  |
| Precision according to ISO 8655 :   |  |  |  | | --- | --- | --- | | **Nominal volume** | **Precision : Maximum permissible systematic errors** | | | 1 μl | ± 5.0 % | ± 0.05 μl | | 2 μl | ± 4.0 % | ± 0.08 μl | | 5 μl | ± 2.5 % | ± 0.125 μl | | 10 μl | ± 1.2 % | ± 0.12 μl | | 20 μl | ± 1.0 % | ± 0.2 μl | | 50 μl | ± 1.0 % | ± 0.5 μl | | 100 μl | ± 0.8 % | ± 0.8 μl | | 200 μl | ± 0.8 % | ± 1.6 μl | | 500 μl | ± 0.8 % | ± 4.0 μl | | 1,000 μl | ± 0.8 % | ± 8.0 μl | |  |
| Three defined stops: Take-up from the first stop. Then dispensing, blow out and tip ejection (single button operation preferred) |  |
| Easy and safe tip ejection mechanism |  |
| Fixation of adjusted volume |  |
| Slim pipette shaft |  |
| Cone for standard tips |  |
|  |  |
| **Manufacturer’s Certificate** |  |
|  |  |
| **Standard Maintenance Tools:** |  |
| Maintenance Kit , full documentation and tools for in-lab calibration according to ISO 9000 and GLP/GMP for the model delivered are part of the procurement |  |
|  |  |
| **Spare Parts:** |  |
| Gaskets, |  |
| Lubricants |  |
| Each microliter pipette should be accompanied by an authorized list of accessories and spare parts |  |

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| **NAME OF EQUIPMENT:** Magnetic stirrer hot plate | | CODE NUMBER 106132 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| A magnetic stirrer is used to dissolve ingredients for culture media or buffer solutions. | | |
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| **MAIN SPECIFICATIONS**: |  |
|  |  |
| * Sturdy case, coated, resistant to chemicals, dyes and disinfectants |  |
| Speed range: 60 – 1200 rpm |  |
| Heating plate, aluminium, stainless steel, or  glass ceramic, resistant to scratch and chemicals |  |
| Plate diameter ≥ 135 mm or surface ≥ 140 cm² if right angle plate |  |
| Heat output: ≥ 600 W |  |
| Heating temperature range: Room temperature to 250 °C |  |
| Heating device and temperature regulation |  |
| Safety circuit hot plate: 50 °C over hot plate temperature |  |
| Temperature setting |  |
| Temperature accuracy at hot plate ± 5 °C |  |
| Load on plate: Up to 20 kg |  |
| Permissible ambient temperature: 5 – 40 °C  Permissible relative humidity: ≤80 % |  |
| Weight: <5 kg |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: Approximately 800 W |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate** |  |

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| --- | --- | --- |
| **NAME OF EQUIPMENT:** Precision balance | | CODE NUMBER 106129 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| A precision balance is mainly used to weight dyes for staining solutions and components for culture media.  General remark: Two environmental factors affect the instrument’s stability considerably; temperature changes and static electricity will cause erratic readings. Therefore the balance should be placed in a room with nearly constant temperature and a relative humidity steadily less than 65 %. The instrument should be operated on a dissipating antistatic surface. | | |

|  |  |
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| **MAIN SPECIFICATIONS:** |  |
|  |  |
| Electronic balance, weighting capacity ≥ 400 g or ≥ 600 g |  |
| Tara range: To capacity by subtraction |  |
| Stabilisation time ≤ 5 s |  |
| Housing resistant to chemicals and cleaning materials. |  |
| Sleek stainless steel weighing pan, approximately 115 mm diameter |  |
| Adjustable feet to level the balance |  |
| Display water-proof and keypad sealed water-proof by a durable flexible membrane |  |
| Back ground illuminated display (backlit) |  |
| Height of characters (digits) larger than 15 mm |  |
| User-friendly menu in different languages, at least English to configure the balance according to the individual requirements. |  |
| Level indicator should be close to or in the view field of the display. |  |
| Built-in motorized calibration weight and automatic adjustment |  |
| Readability: 0.001 g (1 mg) |  |
| Repeatability: 0.001 g (1 mg) |  |
| Linearity: 0.002 g (2 mg) |  |
|  |  |
| **Electric needs:** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: few W |  |
| Optional: Battery, rechargeable battery pack, main power DC transformer |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate**  One certificate should state that the balance has been calibrated at the factory. |  |

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| **NAME OF EQUIPMENT:** pH meter | | CODE NUMBER **106130** |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use**: | |  |
| A pH meter is required to check the pH of buffer solutions and/or culture media solution used in the general diagnostic TB laboratory | | |
|  | |  |
| **MAIN SPECIFICATIONS**: | |  |
|  | |  |
| Portable pH meter, water-proof housing according to Ingress Protection 67 | |  |
| Resolution: ≤ 0.01 pH units | |  |
| Accuracy: ± 0.01 pH units | |  |
| Temperature measurement, ± 0.1 ºC accuracy | |  |
| Calibration with at least 3 standard calibration buffers (pH 4.0, 7.0, 10.0), automatic calibration preferred | |  |
| Calibration reminder: adjustable from 1 to 999 days | |  |
| Temperature compensation, manual or preferably automatic | |  |
| Illuminated display with indication after stabilisation of measured values | |  |
| Multi-function display | |  |
|  | |  |
| **Options** | |  |
| Storage possibility of calibration data (day, month, year, zero point and two values for steepness of curve | |  |
| Complete GLP compliant record | |  |
| Memory storage capacity ≥ 500 measurement data, automatically logged | |  |
| Data access, password protected | |  |
| Transport case with additional compartments for a glass combination pH electrode with integrated temperature sensor, electrode holder swing arm, calibration buffers) | |  |
|  | |  |
| **Electric needs** | |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country | |  |
| Consumption: few W | |  |
| Optional. Battery, mains power DC converter | |  |
|  | |  |
| **Manufacturer’s Certificate** | |  |
| One certificate should state that the pH meter has been calibrated at the factory. | |  |
|  | |  |
| **Accessories:** | |  |
| Optional: RS-232 interface cable for connecting the pH meter to a computer | |  |
| Optional: Software, preferably for installation under Windows | |  |

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| **NAME OF EQUIPMENT:** Analytical balance | | CODE NUMBER 106128 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| An analytical balance is needed for the preparation of drug containing media for DST.  Moreover, it may be used for calibration (recalibration, maintenance) of microliter pipettes used in the laboratory, especially for molecular biology.  General remark: Two environmental factors affect the instrument’s stability considerably; temperature changes and static electricity will cause erratic readings. Therefore the balance should be placed in a room with nearly constant temperature and a relative humidity steadily less than 65 %. The instrument should be operated on a dissipating antistatic surface. | | |

|  |  |
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| **MAIN SPECIFICATIONS**: |  |
|  |  |
| Weighting capacity ≥ 60/200 g) |  |
| Tara range: To capacity by subtraction |  |
| Stabilisation time ≤ 5 s |  |
| Housing resistant to chemicals and cleaning materials. |  |
| Glass (not plastic!) doors should close tightly. |  |
| Sleek stainless steel weighing pan, approximately 80 mm diameter |  |
| Full glass wind screen, with both sides and top cover to be opened. |  |
| Adjustable feet to level the balance |  |
| Display water-proof and keypad sealed water-proof by a durable (frequent use) flexible membrane |  |
| Back ground illuminated display |  |
| Height of characters (digits) larger than 15 mm |  |
| User-friendly menu in different languages, at least English to configure the balance according to the individual requirements. |  |
| Level indicator should be close to or in the view field of the display. |  |
| Built-in motorized calibration weight and automatic adjustment  Alternatively calibration using an external standard weight) |  |
| Readability: 0.0001 g (0.1 mg) |  |
| Repeatability: 0.0001 g (0.1 mg) |  |
| Linearity: 0.0002 g (0.2 mg) |  |
| Optional: Bidirectional interface RS 232C interface with ISO/GLP compliant data export |  |
|  |  |
| **Electric needs** |  |
| Supply voltage: Battery, rechargeable battery pack, main power DC transformer, 100-230 ± 10%, AC, 50/60 Hz  Voltage and plugs shall be adapted to those used inside the country. |  |
| Consumption: few W |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate**  **The manufacturer should provide a declaration of conformity to fulfill the requirements of standards that apply to the product including** Ingress Protection rating and weight classifications and applications.  One certificate should state that the balance has been calibrated at the factory.  **The certificates** shall be specified and provided for each item supplied. |  |
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| **NAME OF EQUIPMENT:** Gas burner for biological safety cabinet | | CODE NUMBER 106221 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This safety gas burner allows flame control with ignition on demand and is suited for work in a BSC. | | |

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| **MAIN SPECIFICATIONS:** |  |
| Compact design ((W x H x D) max.130 x 60 x 170 mm), stainless steel and glass with fire proof controls, for use in a biological safety cabinet |  |
| Nozzles for the use of natural and propane/butane gas |  |
| Gas input filter to protect magnetic valve |  |
| Working pressure for natural gas 18 – 25 mbar |  |
| Working pressure for propane or butane 20 - 50 mbar |  |
| Operation mode: Both hands free, with foot switch, automatic ignition |  |
| Two modes: Conventional short term (flame during pressed foot switch) and flexible start/stop function with timer |  |
| Stable flame in strong laminar air flow |  |
| Ignition and flame control |  |
| Adjustable burn-time (1 sec - ≥ 60 min) |  |
| Automatic cut off of gas supply when re-ignition fails more than 15 sec |  |
| Alarm, audible with display on dysfunction |  |
| Overheating protection |  |
| Integrated drains for liquids accidentally spilled into the burner head |  |
| Removable burner heat |  |
|  |  |
| Tilting of the instrument to both sides should be possible |  |
| **Electric needs** |  |
| Power supply voltage: 100-230 ± 10%, 50 Hz, together with appropriate DC power supply  Voltage and plugs adapted to those used inside the country. |  |
| Consumption: approx. 50 W |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
| **Manufacturer’s Certificate**  Other certificates shall be specified and provided for each item supplied |  |
| **Accessories:** |  |
| Glass spatter guard, a glass cylinder fitted to surround the flame for protection against spattering infectious material |  |
| Adapter for the connection of gas cartridge (e.g. CV 360 or C 206 incl. pressure reducing valve and gas safety hose (500 mm) |  |
| gas safety hose with safety clamps on both sides, 750 - 1,000 mm length |  |

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| **NAME OF EQUIPMENT:** Laboratory Freezer 140 L | | CODE NUMBER 106424 |
| **Tender specifications** | | Bidder’s Specification\* |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |

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| **MAIN SPECIFICATIONS**: |  |
|  |  |
| One door freezer, to be used as free standing freezer or as undercounter (under-laboratory-workbench) version |  |
| Capacity Gross) ≥ 140 L |  |
| Dimensions (W x D x H) approx. 60/60/85 cm |  |
| Net (interior compartment) (W x D x H) approx. 47/43/69 cm |  |
| Cooling system, static |  |
| Defrosting of freezing compartment, initiated manually |  |
| Temperature range of freezer compartment  –9 to – 25 °C |  |
| Housing material and door, steel , coated, colour white |  |
| Door hinges right/left as desired, reversible |  |
| Fungus resistant door gasket |  |
| Door with key lock |  |
| Adjustable feet, levelling |  |
| Interior container made of white plastic |  |
| Four shelves in the freezing compartment, at least three closed wit a freezing flap |  |
| External digital temperature display of freezer compartment |  |
| Malfunction warning signal |  |
| Climate class SN-T |  |
| Refrigerant: Fluorocarbohydrogen-free (R600a) |  |
| Energy rating (energy efficiency class) A+ |  |
| **Manufacturer’s Certificate** |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: approx. 120 W |  |
| Protection class: DIN/EN 60529/or county specific |  |
| Circuit radio interference free in accordance with EN 55 014/ or country specific norms |  |

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| --- | --- | --- |
| **NAME OF EQUIPMENT:** Laboratory Floor standing refrigerator | | CODE NUMBER 106140 |
| Tender specifications | | Bidder’s Specification\* |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function:** | |  |
| Only for use of water solutions (not for organic solvents) and item that do not produce gaseous components that might form explosive mixtures. Otherwise a refrigerator with a switch without performing any sparks has to be used (explosive protected refrigerator) | | |

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| **MAIN SPECIFICATIONS:** |  |
| Energy classification A |  |
| 100% CFC and HFC-free |  |
| Low electricity / consumption, energy rating A+ or better |  |
| Total usable capacity: 140 litres |  |
| Refrigeration compartment optimal regulated at 4 – 8 °C |  |
| Temperature control settings and gauges per compartment |  |
| Automatic defrosting |  |
| 3 shelves of safety glass |  |
| Humidity regulation |  |
| Variable door liner arrangement  Right-hand mounted door, reversible |  |
| Fungus resistant door gasket |  |
| Door with key lock |  |
| Usable up to 40°C ambient temperature |  |
|  |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Protection class: DIN/EN 60529/or county specific |  |
| Conformity according IEC 600-1 / -2 and VDE 0107 / 0750 |  |
| Circuit radio interference free in accordance with EN 55 014/ or country specific norms |  |
|  |  |
| **GLP** conforming documentations via separate digital thermometer |  |
|  |  |
| **Manufacturer’s Certificate** shall be specified and provided for each item supplied |  |

# STANDARDIZATION ITEMS

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| **NAME OF EQUIPMENT:** Incubator | | **CODE NUMBER**  106247 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
|  | |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This incubator is used to allow growth of TB bacilli on culture media | | |

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| **MAIN SPECIFICATIONS:** | | | |  |
| Chamber made of stainless steel, easy to clean | | | |  |
| Housing, corrosion resistant either made of stainless steel or zinc galvanized sheet metal coated with epoxy, hardened by heat treatment | | | |  |
| Double doors, double lock | | | |  |
| Inner doors security glass | | | |  |
| Volume of interior housing ≥ 600 L corresponding to a capacity of about 2000 – 2200 TB culture tubes. | | | |  |
| Designed especially for temperatures up to +70 °C, optimized for living cultures at 37 °C | | | |  |
| Temperature variation at +37 °C <± 0.1 °C | | | |  |
| Temperature overshoot within this limit | | | |  |
| Temperature range +30 °C (at least 5 °C above ambient temperature) to +70 °C | | | |  |
| Adjustable over-temperature protection controller, TWW protection class 3.1 or electronic temperature limiter TWB protection class 2 | | | |  |
| Uniformity of temperature inside the chamber (deviation <± 0.2 °C) | | | |  |
| Two high grade temperature sensors (class A) with mutual monitoring and taking over performance at same working temperature | | | |  |
| Integrated programmable timer | | | |  |
| Programmes stored on power failure | | | |  |
| Adjustable air flap for preheated fresh air intake | | | |  |
| Vent connection with restrictor flap | | | |  |
| Display of temperature | | | |  |
| Alarm, audible with display on dysfunction | | | |  |
| Function signals for operating mode | | | |  |
| Optional: Long term logging (ring store) internal memory to save temperature and error states, with time stamp to the minute | | | |  |
| Optional: Serial RS 232 interface with software for read out of data with PCL3-compatible printer | | | |  |
| **Electric needs** | | | |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country | | | |  |
| Consumption: approx. 2.000 W | | | |  |
| Protection class in accordance with EN 60529 | | | |  |
| Circuit radio interference free in accordance with EN 55 014 | | | |  |
| **Manufacturer’s Certificate**  One certificate should state that the incubator has been calibrated at the factory for +37 °C. | | | |  |
| **NAME OF EQUIPMENT:** Thermocycler PCR | | CODE NUMBER 106423 | |
| **Tender specifications** | | Bidder’s Specification | |
| **Quantity:** | MANUFACTURER: |  | |
| Type / Model |  | |
| Country of Origin |  | |
| **Photo of item :** | | | |
| **Description of function:** | |  | |
| The thermocycler is used in a TB laboratory to amplify fragments of mycobacterial DNA. | | | |

|  |  |
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| **MAIN SPECIFICATIONS:** |  |
|  |  |
| Thermocycler, Peltier elements |  |
| Block for 96 x 0.2 ml tubes, possibility to use block with 48 x 0.5 ml tubes and 96 well PCR plates |  |
| Blocks must be resistant to oxidation |  |
| Heating rate: 4 ºC/s |  |
| Cooling rate 2 ºC/s |  |
| Temperature range, block: 4 to 100 ºC |  |
| Regulating accuracy for block temperature: ± 0.1 ºC |  |
| Block, temperature uniformity at 70 ºC: ± 0.4 ºC |  |
| Internal memory for a max. number of at least 50 programmes with up to 99 steps / programme, free editable |  |
| Heatable lid with automatic height adaptation |  |
| Electromechanical lid blocking to prevent accidental opening during a run |  |
| Temperature range for lid: 80 – at least 103 ºC |  |
| Optional: Interface for remote control via PC: activated RS232 serial port |  |
| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: approx. 500 W |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
|  |  |
| **Manufacturer’s Certificate**  One certificate should state that the thermocycler has been calibrated at the factory and certified according to ISO 13485 quality regulations |  |

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| **NAME OF EQUIPMENT:** Microliter centrifuge (106048) | | CODE NUMBER 106048 |
| **Tender specifications** | | Bidder’s Specification |
| Quantity: | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | |  |
| This centrifuge is designed for routine applications in molecular biology. | | |

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| **MAIN SPECIFICATIONS**: | | | |  |
| Robust metal housing, compact design with chemical resistant (coated) housing; - | | | |  |
| Easy to clean smooth rotor chamber resistant to acids, alkaline, disinfectants used in the laboratory | | | |  |
| low access height ≤ 23 cm and space saving design ≤ 24 x 32 cm (w x d) | | | |  |
| Optional: centrifuge with a built-in cooling system, adjustable in 1 °C steps, at least cool down to 4 °C and keep this temperature at maximmum speed. It should have a pre-cool feature and stand-by cooling. | | | |  |
| Microprocessor controlled centrifuge | | | |  |
| Standard rotor with a capacity of at least 18 positions, chemical-resistant coating aerosol tight ( | | | |  |
| The rotor should only be removable from the centrifuge with aerosol tight lid still in place | | | |  |
| Maintenance-free motor | | | |  |
| Maximal relative centrifuge force: ≥ 15,000 g | | | |  |
| Automatic lid lock starting and during run of rotor | | | |  |
| Option: automatic opening at the end of the run | | | |  |
| Emergency unlock for electricity black out | | | |  |
| LCD display protected, showing time and relative centrifugal force or speed in rcf or rpm | | | |  |
| Speed adjustable in 100 rpm steps | | | |  |
| If a key pad is used, it should be foil protected | | | |  |
| Timer for runs between 30 seconds and 30 minutes and an option for continuous operation for longer runs. | | | |  |
| Short time operation by pressing a time button for short spin | | | |  |
| Adjustment of running time in steps of 30 seconds | | | |  |
| Short acceleration time to max rcf.: ≤ 20 sec | | | |  |
| Short breaking time from max. rcf ≤ 20 sec | | | |  |
| Noise level ≤ 58 dB(A) | | | |  |
| **Electric needs** | | | |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country | | | |  |
| Consumption: approx 250 W | | | |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 | | | |  |
| Protection class in accordance with EN 60529 | | | |  |
| Circuit radio interference free in accordance with EN 55 014 | | | |  |
| **Manufacturer’s Certificate** T 9001 or equivalent  One certificate should state that the centrifuge has been calibrated at the factory. | | | |  |
| **NAME OF EQUIPMENT:** Centrifuge (106224) | | CODE NUMBER 106224 | |
| **Tender specifications** | | Bidder’s Specification | |
| Quantity: | MANUFACTURER: |  | |
| Type / Model |  | |
| Country of Origin |  | |
| **Photo of item :** | | | |
| **Description of function and use:** | |  | |
| This centrifuge will be used in a TB laboratory to spin down mycobacteria in liquefied, decontaminated materials.  The compartments containing the centrifuge tubes (buckets) need to be absolutely aerosol tight closed by transparent lids. At last 3000g will be required for efficient sedimentation within 20 minutes of centrifugation. The centrifuge should preferably be a desk top one; other standalone models are of cause also suited, but more expensive. | | | |

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| **MAIN SPECIFICATIONS:** |  |
| Metal housing, chamber stainless steel |  |
| Cooling capacity at maximum speed sufficient to cool down to +4°C |  |
| Standby cooling |  |
| Induction motor, brushless drive |  |
| Rotor with swing out buckets, at least 4 positions |  |
| Rotor buckets with aerosol tight, transparent lids (clipping or screwable) |  |
| Inserts for buckets adapted to 50 ml centrifuge tubes, conical |  |
| Inserts for buckets adapted to 15 ml centrifuge tubes, conical |  |
| Capacity about 20 x 50 ml |  |
| Max. revolutions per minute approx. 4500 rpm, corresponding to a radius of approx.15 cm |  |
| Relative centrifugal force (rcf) approx. 3400 g |  |
| Noise level at maximum speed not more than 60 dB(A) |  |
| Programmable for all parameters (switchable between rpm/rcf) of a run, large display |  |
| Soft start and different acceleration levels (1-9), different braking levels (1-9) and brake force cut off |  |
| Input / recall of programmes, storage positions at least 20 |  |
| LCD display (protected against splash of liquids) for indication of run time, speed (rpm) or rcf (after entering centrifugation radius) switchable, actual temperature, time left to finish run |  |
| Imbalance switch-off |  |
| Motor overheating protection |  |
| Chamber overheating protection |  |
| Rotor recognition for appropriate over speed protection |  |
| Safety lock of lid during run and as long as the rotor is moving |  |
| Possibility of mechanical opening of lid if there is current black out |  |
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| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: approx. 1800 W |  |
| Electric safety at least according to UL 61010-1, EN 61010-1 |  |
| Excess-voltage category II |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
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| **Manufacturer’s Certificate**  One certificate should state that the centrifuge has been calibrated at the factory. |  |

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| **NAME OF EQUIPMENT:** Hot-air oven (106099) | | | CODE NUMBER 106099 |
| **Tender specifications** | | | Bidder’s Specification |
| Quantity | | MANUFACTURER: |  |
| Type / Model |  |
| Country of Origin |  |
| **Photo of item :** | | |
| **Description of function and use:** | | |  |
| This hot air oven is used to dry and sterilize glass ware and small laboratory materials after cleaning before reuse | | | |

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| **MAIN SPECIFICATIONS:** |  |
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| Chamber made of stainless steel, easy to clean |  |
| Housing, preferably stainless steel or at least durable corrosion-resistant coating of metal used. (e. g. galvanized sheet metal coated with epoxy, hardened by heat treatment). |  |
| Volume of interior housing ≥ 250 Lfor regional/reference laboratories, 125 L for other laboratories |  |
| Two doors, double lock |  |
| Temperature range from 10 °C above ambient to +250 °C |  |
| Forced air ventilation by air fan |  |
| Air fan , < 58dB at full speed, speed adjustable |  |
| Adjustable air flap for preheated fresh air intake |  |
| Vent connection with restrictor flap |  |
| Alarm, audible with display on dysfunction |  |
| Switch off function at approx. 10 °C above temperature value set |  |
| Digitally adjustable electronic controller TWW protection class 3.1 |  |
| Mechanical temperature limiter TB class 1 at fixed value 10 °C above maximal hot-air oven temperature (250 °C) |  |
| Integrated programmable timer |  |
| Programmes stored on power failure |  |
| Display of temperature |  |
| Function signals for operating mode |  |
| Optional: Serial RS 232 interface with software for read out of data with PCL3-compatible printer |  |
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| **Electric needs** |  |
| Supply voltage:100 - 230 ± 10%, AC, 50/60 Hz, plug type adapted to the country |  |
| Consumption: 2.400 W (during heating), adaptation of heating power according to the preset temperature value |  |
| Conform to electrical safety IEC-60601-1, UL 61010-1, EN 61010-1 |  |
| Protection class in accordance with EN 60529 |  |
| Circuit radio interference free in accordance with EN 55 014 |  |
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| **Manufacturer’s Certificate**  One certificate should state that the hot-air oven has been calibrated at the factory for +160 °C. |  |
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| **Accessories:** |  |
| One additional set of perforated stainless steel shelves, non-tipping, if less than two are provided with the hot-air oven |  |