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DEPARTMENT OF FACTORIES & BOILERS

No.A3/4124/F&B/2015

“SURAKSHA BHAVAN”
OFFICE OF THE DIRECTOR OF
FACTORIES AND BOILERS,
MEDICAL COLLEGE P.O.,
THIRUVANANTHAPURAM,
DATED: 22-09-2015.
PHONE:0471– 2441597,2440974.

TENDER NOTICE

Sealed Tenders are invited from the manufactures and authorized dealers for the supply and installation of the following high quality branded equipments separately.

The tender should be subscribed “**Tender for the supply of work environment monitoring (Specified the name of the Equipment)**” and addressed to the Director, Sureksha Bhavan, Directorate of Factories & Boilers, Kumarapuram. Thiruvananthapuram -11.

| Sl. No. | Item | Quantity | Estimate Amount | EMD | Cost of Tender Form |
|---------|--|----------|-----------------|-------------------------|---------------------|
| 1. | Area air sampler (low volume) | 4 | 1,50,000 | 1 % of the cost of Item | Rs.400+VAT |
| 2 | Vertical Elutriator | 4 | 2,00,000 | “ “ | Rs.400+VAT |
| 3 | Vibration Meter | 4 | 2,20,000 | “ “ | Rs.500+VAT |
| 4 | Air Velocity meter | 3 | 1,00,000 | “ “ | Rs.400+VAT |
| 5 | Non-ionising radiation (UV,IR,electromagnetic fields) meter | 1 each | 4,00,000 | “ “ | Rs.800+VAT |
| 6 | Intrinsically Safe Digital Multimeter | 3 | 4,50,000 | “ “ | Rs.900+VAT |
| 7 | Intrinsically Safe Lux meter | 4 | 2,00,000 | “ “ | Rs.400+VAT |
| 8 | Personal heat stress monitor | 3 | 2,00,000 | “ “ | Rs.400+VAT |
| 9 | Radiation Survey meter | 2 | 2,00,000 | “ “ | Rs.400+VAT |
| 10 | Personal Dosimeter | 2 | 1,00,000 | “ “ | Rs.400+VAT |

Last date for the receipt of filled up Tenders: 1 PM on 28-10-2015
Opening Tender : 2 PM on 28-10-2015

Tender and other details can be had from the Director of Factories & Boilers, Thiruvananthapuram on all working days till 28-10-2015, 1 PM. The under signed reserves the right to reject the tender without assigning any reason thereof. . The tender notification is also available in the official Website: www.fabkerala.gov.in

DIRECTOR OF FACTORIES & BOILERS

Specifications

1. Area air sampler (low volume) with accessories

Description

Portable, lightweight Low Volume Air Samplers effective for accurate samples for air pollutants; asbestos fibers; smoke and smog; industrial health and safety tests; atmospheric conditions; quarry or mine air hazards; factory dusts; research and testing, etc. including chemical and toxicological analyses.

Suitable for mobile or fixed position operation.

Suitable for use with filter cassettes, size-selective samplers, impingers etc.

Fully adjustable flow control valve on graduated rotometer, settable over the full flow range.

Accurate to $\pm 5\%$ full scale.

Chassis mounted ON-OFF switch with fuse protection

Oil-less rotary vane pump designed for continuous use

Internal intake and exhaust mufflers

AC Line or Rechargeable battery powered models and re-charger

Sampling Range: 3-35 LPM

Vacuum: 0-30" (0-762 mm) Hg

Standard Components: Motor, pump, built-in flowmeter (rotometer), Vacuum gauge, Filter Holder Assembly, convenient carrying handle.

Accessories: Filter Holder Assemblies to avoid filter contamination, filter cassettes of 37mm dia with end caps, Flexible tubing/sampling hose, Cassette to tubing adapter, direct-reading Calibrator for fast and accurate air flow calibration.

Warranty : 3 Years

2. Vertical elutriator cotton dust sampler with vacuum pump

Description

Cotton Dust Sampler with a tripod stand and alternatively provision for mounting on the columns or walls of the work place. The sampler shall consist of **vertical elutriator**, a three-piece plastic 37mm filter cassette, critical orifice for regulating the flow rate at 7.4 ± 0.2 lpm, low maintenance vacuum pump with mounting brackets, 0 to 30" Hg vacuum gauge, tubing, fittings and filter jar.

Features: To meet all cotton dust regulations

Specifications

| | |
|--------------------|--|
| Flow Rate | 7.4 lpm |
| Particle Cut-Point | 15 μ @ 7.4 lpm |
| Filter Cassette | Plastic (polystyrene); for 37mm membrane filter with back-up pad; three-piece design |
| Filter Media | Polyvinylchloride (PVC) filter media with 5-micron pore size, 37mm diameter |

| | |
|---------------------|--|
| Vacuum Gauge | 0 to 30”Hg |
| Vacuum Pump | Oil-Less Rotary Vane, 1/10 HP, 1.25 cfm (35 lpm) free-flow |
| Vertical Elutriator | Over-all dimensions - 6-inch (15 cm) O.D. x 28-inch (71 cm) L; weight: 7.25 lbs. (3.3 kg) max. |
| Power | 220-230V AC, 50-60Hz |
| Warranty | 3Years with calibration agreement |

3. Vibration meter (intrinsically safe) with calibrator

Digital Human Vibration Meter & Analyser integrated with triaxial Whole-Body accelerometer seat-pad for worker exposure and industrial hygiene studies.

Hand Arm & Whole Body Capability.

Hand-held instrument for measuring human exposure to vibration, performing relevant calculations and providing overall metrics.

LCD display.

Intrinsically safe.

Frequency weightings and measurements for Hand-Arm and Whole Body Vibration

Conforms to ISO/EU Standards

Simultaneous 3-channel Measurements: X, Y and Z axes, plus Sum (S) and logs RMS, MTVV, VDV and peak values.

Lightweight and Portable - operates from rechargeable batteries with battery pack and charger.

USB and Serial Interface to PC.

Tri-axial Accelerometer with Calibrator.

Full Graphical Download Software

Measuring range:

Acceleration (RMS) 0.075 m/s² to 75 m/s²

Frequency 5 Hz – 1.6k Hz

Warranty : 3 years

4. Air Velocity meter

Portable, light weight air velocity meter for environmental wind and temperature testing/analysis.

Simultaneous display of Ambient Temperature and Air Flow or Air Velocity.

Super large LCD Backlit Display.

3% velocity accuracy

Battery operated.

Air Velocity Resolution

0.01 M/S

Air Velocity Range

0.40 To 30.00 M/S

Warranty : 3 Years with calibration agreement

5. Non-ionising radiation (UV, IR, electromagnetic fields) meters

i) UV light irradiance and exposure meter

For worker exposure measurement to UV radiation mainly during welding and foundry operations.

- Hand held UV meter with interchangeable sensor heads
- Measurement unit: mW/cm^2 or mJ/cm^2
- Interference filter to select appropriate UV band and to eliminate all other unwanted radiation
- Non sensitive to infra red
- Designed for wavelength range and TLVs in actinic region of UV radiation as per ACGIH
- Carrying case
- Battery powered (batteries included)
- LCD display
- CE mark

ii) Infrared irradiance and exposure meter

For worker exposure measurement to IR radiation mainly during welding, cutting and foundry operations.

- Hand held meter
- Measurement unit: W/cm^2
- Interference filter to select appropriate IR band and to eliminate all other unwanted radiation
- Non sensitive to other radiations
- Designed for wavelengths and threshold limits of IR radiation as per ACGIH
- Carrying case
- Battery powered (batteries included)
- LCD display
- CE mark

iii) EMF intensity meters/survey meters

For worker exposure measurement to Electro Magnetic Fields during various industrial manufacturing operations.

- Combined electric, magnetic, radio/microwave field sensing(single axis)
- digital display
- selectable magnetic field units (gauss, tesla, amperes per meter)
- Electric field strength and power density units in V/m , W/cm^2 or W/m^2
- Unit with dielectric handle, batteries, user manual and fitted carrying case.
- designed to evaluate both electric and magnetic fields associated with 50 Hz power lines, line-powered equipment and appliances, etc.

- provides the industrial hygienist, engineer and safety professional with a sophisticated tool for accurate investigation of power frequency environments.
- Warranty : 3 Years with calibration agreement

6. Intrinsically Safe Digital Multimeter

- Intrinsically safe for Ex-rated areas
- Intrinsically rugged and sealed for extreme conditions
- waterproof, dust-proof and drop-proof
- Ex certifications from the world's leading certification bodies
- CE mark
- Resistance and continuity test
- Relative mode to remove test lead interference on resistance measurements
- Backlit keypad buttons to provide extra visibility in poorly lit areas
- Backlit display for increased visibility

Measuring range

Resistance 0.1 Ω to 100 Ω

Basic Accuracy Specifications

Accuracy \pm (0.2 %)

General Specifications:

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|----------------------------|---|
| Power | Rechargeable batteries with Battery charger |
| Display | LCD, with backlight |
| External protection | Rubber holster |
| Warranty | Three years with calibration |

7. Intrinsically safe Lux meter

Instrument for determining the right light conditions/measuring light exposure in industrial work environment to ensure that lighting is adequate in the workplace.

- Selectable units of measurement: Lux (lx) or foot candle (fc); selectable
- Measuring range: 0 to 40,000 lx (0 to 3,716 fc)
- Resolution: 0.1 lx / 0.01 fc
- Measuring accuracy: $\pm 5\% \pm 10$ lx/fc (< 10,000 lx / 1,000 fc), $\pm 10\% \pm 10$ lx/fc (> 10,000 lx / 1,000 fc)
- backlit display
- Battery operated
- Intrinsically safe
- Warranty : 3 Years with calibration agreement

8. Personal heat stress monitor

Personal heat stress monitor for directly detecting the individual's physiological heat response. For applications where industrial workers face a wide range of heat exposure.

User-selected alarm trip points to provide an audio alert to workers experiencing elevated core temperatures.

To monitor personal heat stress levels and to create heat stress measures that can minimize risk.

Compact size combined with belt or pocket attachment for convenient personal monitoring.

Ear canal sensor for measurement and warning of dangerous deep body core temperatures.

Data logging for documentation of personal heat exposure.

Intrinsic safety certification for monitoring in potentially hazardous locations where heat is often extreme.

SPECIFICATIONS:

SENSOR:

Thermistor Temperature Sensor

Accuracy and ranges: +/-0.1° C (0.2° F) from 32° C to 40° C
(89.6° F to 104° F)

MEASUREMENT PARAMETERS:

Temperature reading: Celsius / Fahrenheit (selectable)

10 second data logging intervals

Overall summary data

Detailed time history data

MECHANICAL DESIGN:

Water & dust ingress protection rating

Light Weight Housing & Ear sensor assembly

OPERATING TEMPERATURE RANGE:

Unit: 0° C to 70° C (32° F to 158° F)

OPERATING HUMIDITY:

0% to 95% (non-condensing)

DATA MANAGEMENT SOFTWARE TO BE PROVIDED

OUTPUT:

Printer / computer interface

Audio Alert

POWER SOURCE:

Rechargeable or disposable batteries

STANDARDS / APPROVALS:

Intrinsic Safety UL/CSA standards for Class I groups C & D;

Class II groups E, F & G;

Class III temperature code T3C

Electromagnetic conformance: CE Mark
Warranty : 3 Years with calibration agreement

9. Radiation survey meter

Geiger detector for measurement of alpha, beta and gamma and X-rays

Main features:

- **3 second update**
- **audible and silent alarms**
- **count rate and dose rate mode**
- **audio output jack**
- **simple operation**
- **μSv/hr or mR/hr options**

General purpose Geiger-Müller detector for detection and measurement of alpha, beta and gamma radiation as well as X-rays down to 10 keV.

Ideal for measurement of dose rate from beta and gamma sources for environmental control applications.

Large digital display that can be switched between counts per minute (cpm), counts per second, dose rate in μSv/hr, dose rate in mR/hr, or total counts.

LED blinks and a beeper chirps with each count (the chirp can be muted).

Audible alarm to warn the user when preset radiation level thresholds are exceeded.

Dual miniature jack to provide output to computers or data loggers and audio output to an external earpiece or amplifier.

Specifications:

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|-----------------|---|
| Sensor | Halogen-quenched Geiger-Müller detector with mica end window. |
| Display | 4-digit liquid crystal display with mode indicators |
| Operating range | 0.01-1000 μSv/hr (Cs-137), 0-3500 cps; 0.001-100 mR/hr (Cs-137); 0-350,000 cpm; |
| Calibration | Cesium 137 (662 keV gamma) |
| Sensitivity | 100 cpm/μSv/hr referenced to Cs-137 |
| Accuracy | ±10% typical; ±15% max |
| Timer | Can set 1-10 minute sampling periods in 1-minute increments, 10-50 minute sampling periods in 10-minute increments, and 1-24 hour sampling periods in 1-hour increments |
| Alert | User-adjustable alert level set using buttons |
| Count light | Red LED flashes with each count |

| | |
|----------------|--|
| Audible signal | Chirps for each count (can be muted) |
| Outputs | Dual miniature jack that can send counts to Computers/data loggers. Submini jack provides audio output to an external earpiece, amplifier, or recorder |
| Power | Rechargeable/ alkaline battery |
| Warranty | 3 Years with calibration agreement |

10. Personal dosimeter

Geiger detector for measurement of gamma and X-ray radiation

Main features:

- vibration and audible alarms
- data storage
- PC communication
- simple operation
- compact and lightweight
- shockproof, watertight housing
- belt clip

High sensitivity dosimeters measuring dose and dose rate (Hp(10) equivalent dose) from gamma rays down to low-energy X-rays (10 keV). Device designed specifically for non-technical personnel, suitable for a range of applications including personal dose measurement and control, environmental surveys and detection of radioactive sources with a dose rate measurement range of 0.01 μ Sv/hr - 0.2 Sv/hr displayed on a backlit LCD. Both dose rate and accumulated dose alarms and flashes a warning in the event of reaching maximum instrument dose. Data including dose histories and alarm events are stored in memory and can be downloaded to a PC.

Specifications:

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|--|----------------------------------|
| Detector | Geiger-Müller tube |
| Dose equivalent rate measurement range (DER) Hp(10): | 0.1 mSv/h – 0.1 Sv/h |
| Dose equivalent rate indication range (DER) Hp(10): | 0.01 mSv/h – 0.2 Sv/h |
| Dose equivalent rate threshold range | Within all DER measurement range |
| Dose equivalent measurement range Hp (10) | 1 mSv - 9.99 Sv |
| Dose equivalent indication range Hp (10) | 0.01 mSv - 9.99 Sv |

| | |
|--|--|
| Energy range | 10.0 keV - 20.0 MeV |
| Energy response relative to 0.662 MeV (Cs-137) within the full energy range | ±30% |
| Time of response at discontinuous variation of DER (according to IEC 61526), | no more than 5s - at increase 10s - at decrease |
| Survival after momentary influence of maximum permissible gamma radiation: | 1 Sv/h |
| Power supply | Rechargeable/alkaline battery |
| Battery discharge indication (partial and critical) | LCD indication |
| Operating conditions: | |
| - temperature | from - 20 up to +60 °C |
| - LCD indication | from - 20 up to +60 °C |
| - relative humidity | up to 98% at 35°C |
| Warranty | 3 Years with calibration agreement |

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