

## TERM OF REFERENCE (TOR) BARANG



No. PR: CBT/PR-26/INV/0412

### 1. TUJUAN PENGADAAN

Sebagai alat untuk pengujian trace elemen logam pada sample Lingkungan.

Kebutuhan pengadaan untuk kegiatan portofolio Laboratorium **SBU Laboratorium sub bagian AKL, Cabang Padang, dan Cabang Surabaya.**

### 2. SPESIFIKASI TEKNIS

Nama barang <sup>a)</sup>	<b>Atomic Absorption Spectrophotometer (AAS) + Graphite Furnace</b>
Merk	Agilent
Type	240FS+ GTA120/PSD120
Persyaratan tambahan	<p>Include :</p> <ul style="list-style-type: none"><li>1 unit AA – 240 FS (Fast Sequential)</li><li>• ICP-AES speed of analysis with AAS cost</li><li>• FULLY AUTOMATED PC Controlled AAS with Varian Patented "FAST SEQUENTIAL" system, ability to determine multi-elements simultaneously in sample. Save labor and reduce running costs – the more elements you determine, the more you save on gas, reagent – sample and lamp usage.</li><li>• Double beam optic fully sealed and mirrors quartz over coated. Automated Slit selection of 0.2; 0.5 and 1.0 nm plus one reduced height slit of 0.5 nm for Graphite Furnace Operation.</li><li>• Wide range photo multiplier covering full wavelength range of 185 - 900 nm.</li><li>• High intensity Deuterium background corrector; to 2.3 Abs, 2 ms response. Electronic modulation with automatic attenuation. Easy aligned and replaced by user.</li><li>• New Technology Patented Fixed 4 Lamp position not using Turret. All lamps operated simultaneously in Fast Sequential mode. Speed of analysis 2 times faster than conventional AAS using 8 LAMP TURRET. Lamps automatically switch off at the end of analysis.</li><li>• Hammer Programmable Gas Control. PC Controlled gas flows with automatic oxidant setting of gas flows for each element. Automatic oxidant change over. Features unique fast response Hammer solenoid valve for rapid regulation and setting of selected gas flow.</li><li>• Fast Sequential Software Assembly; determines 10 elements per sample less than 2 minutes.</li><li>• Typical Performance: &gt;0.90Absorbance with precision of &lt;0.5% RSD from ten 5 second integration times for 5 ppm Cu solution.</li><li>• Mark -7 Universal Atomization Spray Chamber for aqueous and organic samples. Complete with Pt/Ir Adjustable Nebulizer; drain tubing; spare glass impact bead; burner cleaning strips; spare O-rings and tools.</li><li>• For operation on 220 V, 50 Hz</li></ul>

**1 unit GRAPHITE FURNACE ACCESSORIES GTA120/PSD 120 FOR AAS**

1x GTA-120 Graphite Tube Atomizer is fully automated "Constant Temperature Zone (CTZ)" graphite furnace, provides outstanding performance at ppb Levels with flexibility to handle difficult samples quickly and effectively.


- Dynamic Feedback Temperature control with cooling water temperature compensation. Up to 20 temperature step per program, temperature programable from 40-30000°C with maximum heating rate 2000°C/sec.
- Choice of two inert gases with PC-controlled internal flow variable 0 – 0,3 L/min. Fixed external gas flow of 0.5 L/min with PC-controlled boost of 0.3 L/min, during automatization 2 stage external gas flows reduce gas consumption by up to 40% and provide enhanced tube lifetimes. Typical tube life time exceed 5,000 firings for CU using an atomization temperature of 23000°C.
- Solid Titanium Furnace workhead for maximum corrosion resistance.
- Graphite tube enclosed in an inert gas atmosphere by a one piece graphite shroud located in the furnace workhead. The workhead feature quartz end windows for high light transmission. Rapid release mechanism for easy tube replacement.
- Analytical method "cookbook" information displayed for each method in the method window. Includes typical calibration graph and list of alternative wavelengths with comparative sensitivities and any other analytical recommendations.
- Complete with all gases hoses; cable, connector and cooling water tubing.
- Surface response methodology (SRM) auto-optimization routine can be applied to optimize graphite furnace parameters for any selected elements. The SRM Wizard models the absorbance as a function of the ashing and atomization temperatures and sets the recommended optimum parameters into the method.

**1 unit PSD-120 Automatic Programmable Sample Dispenser For GTA 120 Graphite Furnace**

- Capacity for up to 50 samples in 2 mL vials, plus up to 5 central 25 mL vessels for blank solution, bulk standard and chemical modifier.
- Automatically prepare up to a 10 point concentration or standard addition calibration from one bulk standard.
- Automatic addition up to 3 chemical modifier with pre/post and/or coinjection of modifier. Automatic over range volume reduction reduce sample volume by a user determined dilution factorenabling re-determination of over range samples.
- Multiple Injection up to 99 times preconcentrates sample for enhanced sensitivity.
- "Hot injection" for Fast Furnace Analysis, with injection temperature programmable from 40-200°C and programmable injection rate.
- Dispensed volume variable from 1-7 uL, repeatability of volume < 1% RSD (5-70 uL), Air segmented solution pick-up, 1 L pressurized rinse vessel, flow through capillary rinse system after each injection.

**ACCESSORIES FOR OPERATION :**

- 8x Hollow Cathode Lamp
- 1x Graphite Tube : pkg of 10
- 1x Nitrous Oxide Burner Head
- 1x Acetylene Burner Head
- 1x DELL PC, Monitor & Printer
- 1x Blower & Vent Assembly, including flexible ducting
- 1x Oil less Air Compressor
- 1x Recirculating Water Cooling system
- 1x UPS 10 KVA

	1x IT Trafo 10 KVA 1x UPS 2 KVA 1x IT Trafo 2 KVA 1x N2O heated regulator 1x Acetylene Regulator 1x Argon regulato
Gambar	
Jumlah	3 Unit

**SYARAT-SYARAT UMUM BAGI PENYEDIA EKSTERNAL (\*\*\*)**

**1 Keagenan**

Penyedia Eksternal merupakan distributor/dealer/agen yang ditunjuk resmi oleh pabrik atau pemegang hak cipta untuk pemasaran di Indonesia yang dibuktikan dengan surat resmi penunjukan dari distributor tunggal.

**2 Pengalaman Implementasi**

Penyedia Eksternal berpengalaman dalam instalasi dan implementasi dengan melampirkan referensi-referensi dari perusahaan lain yang menggunakan alat tersebut.

**3 Pelayanan Purna Jual/ Maintenance**

Penyedia Eksternal harus memberikan garansi selama 12 bulan/1 tahun sejak dibuatnya Berita Acara Uji Coba.

Yang dimaksud dengan garansi adalah:

- Garansi suku cadang selama 12 bulan/1 tahun dan service selama 12 bulan/1 tahun;
- Tersedianya suku cadang;
- Tersedianya teknisi yang berpengalaman dan tercatat sebagai pegawai tetap, untuk perbaikan alat dan sanggup datang segera jika diperlukan;
- Selama masa garansi bila perbaikan-perbaikan dilakukan diluar SUCOFINDO dalam jangka waktu yang cukup lama, maka pemasok berkewajiban untuk meminjamkan peralatan pengganti, supaya operasional SUCOFINDO tidak terganggu.