

Perkin Elemer 3110 Atomic Absorption Spectrometer Standard Operating Procedure

Written 10-31-07

- 1) Make sure exhaust vent is open and operating
- 2) Turn on instrument
- 3) Check that drain loop contains DI
- 4) Plug in lamp for element you are running
- 5) Press: **Param Entry**
- 6) Set lamp current to recommended level listed on lamp label
- 7) Set integration time (normally 1 to 10 seconds)
- 8) Enter number of replicates to be run for each sample (normally 3)
- 9) Enter calibration type (normally non-linear)
- 10) Enter technique you are running (Flame)
- 11) Enter standard concentrations
- 12) Press: **Energy**
- 13) Set wavelength & slit width for element you are running
- 14) For flame, slit height is always set to “high”
- 15) Peak in wavelength by maximizing energy reading
- 16) Adjust horizontal position of burner head-use card to see light path-to center light beam over the burner slot
- 17) Press: **Cont**
- 18) Press: A/Z to auto zero instrument (should read ABS = 0.000)
- 19) Raise burner head by turning vertical adjustment counter clockwise until you obtain a slight positive absorbance (should read ABS = 0.003)
- 20) Slowly rotate vertical adjustment clockwise until the absorbance returns to zero. Rotate knob an additional 1/4 turn clockwise.
- 21) Compressed Air line pressure should be ~ 51 to 65 psi
- 22) Open Acetylene gas tank
- 23) Check that tank pressure is above 100 psi. If not change out tank

- 24) Check that line pressure is ~10-13 psi, but NOT above 15 psi.
- 25) Turn gas on to “air”
- 26) On pressure gauge, gas should be ~2 and air ~4 psi
- 27) Press ignite switch to light flame
- 28) Aspirate DI and let flame stabilize for about 60 seconds
- 29) Aspirate a standard
- 30) Peak out burner head position, lamp position, wavelength, and nebulizer rate to maximum energy.
- 31) Turn nebulizer locking ring clockwise to loosen
- 32) Slowly turn nebulizer adjustment knob counter-clockwise until bubbles appear in the standard solution.
- 33) Slowly turn nebulizer adjustment knob clockwise to the maximum absorbance reading
- 34) Lock the nebulizer adjustment knob
- 35) Aspirate Blank (1% HNO₃), then press: **A/Z**
- 36) Aspirate first standard, then press: **Calib**
- 37) Run all standards in curve
- 38) Always wipe nebulizer tubing with a kimwipe between every standard and sample to prevent cross contamination
- 39) Aspirate sample, then press: **Read**
- 40) After run – aspirate DI for ~ 15 min to clean out any remaining sample in chamber and burner head
- 41) Turn gas to “off” to extinguish flame
- 42) Close Acetylene tank valve-but leave line open
- 43) Turn gas to “air” to bleed lines until regulator reads zero psi
- 44) Turn gas to “off”
- 45) Repeat steps 31 & 32 until there is no gas left in the lines
- 46) Close line valve
- 47) Turn of voltage to lamp

48) Turn off instrument