



**Sheppard T. Powell  
Associates, LLC**

**Laboratory  
Services  
Price List**

**1915 Aliceanna Street  
Baltimore, MD 21231**

**410-327-3500**

**[www.stpa.com](http://www.stpa.com)**

**January 2012**



**Sheppard T. Powell  
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Baltimore Maryland [www.stpa.com](http://www.stpa.com)

# Terms And Conditions

## Sample Submittal

Submit samples with the following.

- ◆ Contact information, sample description and level of required service (normal, priority, superpriority). Please indicate desired analyses and any billing instructions.
- ◆ Individual sample identification marks, corresponding to accompanying paperwork.

## Sampling

The quality of the results depends on the quality of the sampling. The STPA technical staff is available to answer any questions regarding sampling procedures.

## Priority Samples

Priority/Superpriority analyses are available and must be approved and scheduled by the laboratory. For metallurgical and deposit analyses Priority Service (10 business days from sample receipt) is 50% over base price. Superpriority Service (5 business days from sample receipt) is twice the base price. For water analyses, call for pricing.

## Quotations

Quotations for laboratory services will be provided upon request. Fee discounts may be available for groups of samples submitted for the same analysis.

## Confidentiality Of Results

All testing is done in the strictest confidence. Results will be given only to the client. Identified results will be released to other parties only with the written consent of the client.



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Full Service Chemical And Metallurgical Laboratory  
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# Metallurgical Examinations

NOTE: Rates Do Not Include Engineering Fees  
For Interpretation Of Results

\* Initial Photograph Will Be Taken At No  
Charge, Fee Will Be Assessed If Additional  
Exposures Are Requested To Provide Greater  
Detail

\*\* Minimum Charge Includes Grinding And  
Sieving Of Most Deposit Samples

**Boiler/HRSG Tube Deposit Weight Analyses,  
Mechanical Method Plus Dimensional Assessment** -  
Section Sample, Remove Deposits And Report Grams Per Square Foot Of Area,  
ASTM D3483-83 Method A, As Received Photos And Visual Examination \$250.00 Per Specimen

**Dimensional/Visual Pipe Assessment** - Section Sample, Measure  
Pipe Inner Diameter, Wall Thicknesses And Pit Depths, As Received Photos,  
And Document Visual Condition \$250.00 Per ≤ 3"  
Diameter Pipe. Call For  
Larger Samples

**Condenser Tube Dimensional Survey** Call For Quotation

**Boiler/HRSG Tube Failure Analysis** - Mounting And Polishing Of  
Specimen To Show Nature And Cause Of Damage, Preparing Macrographs,  
Photomicrographs And Memorandum \$1600.00 Per Specimen

**Boiler/HRSG Tube Failure Analysis With In Situ SEM** -  
Includes Failure Analysis Plus in situ SEM/EDXS Assessment Plus Metallurgical  
Report \$1900.00 Per Specimen

**Boiler/HRSG Tube Microstructure Evaluation** - Checks  
Microstructure On Hot And Cold Side Plus a brief Metallurgical Memorandum \$850.00 Per Specimen

**Other Failure Analyses (With SEM/EDXS)** Call For Quote From  
Metallurgist

Scanning Electron Microscopy (SEM) And/Or Energy Dispersive X-Ray  
Spectroscopy (EDXS) Analysis (Qualitative And Semiquantitative) \$225.00 Per Sample\*\* or  
\$200.00 Per Hour

Preparation Of Mount With Polishing (Not Associated With Failure Analyses) \$180.00 Per Mount

Additional Photographs\* (Not Associated With Failure Analyses) \$45.00 Per Exposure

Deposit Sample Preparation For SEM/EDXS Analysis (May Be Applicable To  
Unusual Sample Types) \$55.00 Per Specimen

Loss on Ignition Of Deposit \$55.00 Per Sample

Technical Consultation, Research And Report Preparation \$175.00 Per Hour

Rockwell Hardness Test \$35.00 Per Specimen

Surface Examinations (Visual, Microscopic, Metallographic And SEM/EDXS As  
Required) Call For Quotation

Corrosion Or Remaining Life Assessments (Involving Metallurgical Laboratory  
Consulting And Testing Services) Call For Quotation

Metallographic Deposit Thickness Measurement In Boiler/HRSG Tubes  
(Does Not Include The Cost Of The Mount) \$350.00 Per Mount



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## Deposit Analyses

**Note:**

Additional Metal Analyses Available Upon Request

\* Quantitative analysis includes quantitative elemental analysis of iron, copper, nickel, zinc, chromium, aluminum, manganese, sodium, calcium, magnesium, molybdenum, phosphate, silica, lead (only reported if found). Barium, water-soluble chloride, and water-soluble sulfate are evaluated qualitatively and quantified if detected by the qualitative test.

\*\* SEM/EDXS Is A Semiquantitative Elemental Analysis Method.

\*\*\* Please notify the laboratory if vanadium is expected to be present in the sample.

Constituent	Price
Loss On Ignition (LOI)***	\$55.00
Sample Preparation (For Unusual Samples)	\$55.00
Quantitative Analysis*	\$340.00
Elemental Analysis (by SEM/EDXS)**	\$225.00
Single SEM/EDXS With LOI**	\$280.00
SEM/EDXS Before And After LOI Test**	\$330.00
IC Scan Of Water Soluble Anions (See Ion Chromatography)	\$150.00
pH Of 0.1 - 1.0% Suspension	\$30.00



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# Water Analyses

**SM** - Standard Methods For Examination Of  
Water And Wastewater. 21st Edition, 2005

◆ **SM 3111B** - Direct Air - Acetylene FAA  
Method

◆ **SM 3111D** - Nitrous Oxide - Acetylene FAA  
Method

**EPA** - Methods For Chemical Analysis Of Water  
And Wastes, EPA-600/4-79-020, March 1983

**Hach** - Hach Company Water Analysis Method

**IC** - Ion Chromatography

**FAA** - Flame Atomic Adsorption Spectroscopy

**GFAA** - Graphite Furnace Atomic Absorption  
Spectroscopy

**NPOC** - Nonpurgable Organic Carbon

**N.D.** - Not Determined

**Note** - \$15.00 Sample Preparation Charge May  
Apply For Samples Requiring Digestion,  
Filtration Or Dilution

Analysis	Method	Detection Limit (mg/L) As	Price
Acetate	IC	0.005 CH <sub>3</sub> CO <sub>2</sub>	\$31.00
Acidity	SM 2310	5 CaCO <sub>3</sub>	\$16.00
Alkalinity	SM 2320	5 CaCO <sub>3</sub>	\$16.00
Aluminum	SM 3111D	0.5 Al	\$16.00
	GFAA	0.005 Al	\$26.00
Ammonia	Hach 8038	0.10 N	\$16.00
Arsenic	GFAA	N.D.	\$26.00
Barium	SM 3111D	0.1 Ba	\$16.00
	GFAA	0.050 Ba	\$26.00
Bromate	IC	0.3 BrO <sub>3</sub>	\$31.00
Bromide	EPA 300.1	0.1 Br	\$31.00
Cadmium	SM 3111B	0.01 Cd	\$16.00
	GFAA	0.005 Cd	\$26.00
Calcium	SM 3111B,D	0.2 Ca	\$16.00
	GFAA	0.002 Ca	\$26.00
Chlorate	EPA 300.1 B	0.10 ClO <sub>3</sub>	\$37.00
Chloride	EPA 300.1	0.1 Cl	\$31.00
	IC	0.001 Cl	\$31.00
Chlorite	EPA 300.1 B	0.10 ClO <sub>2</sub>	\$37.00
Chromium	SM 3111B	0.2 Cr	\$16.00
	GFAA	0.005 Cr	\$26.00
Color, True And Apparent	Hach 8025	Pt Co	\$16.00
Conductivity	SM 2510	0.1 μS/cm	\$11.00
Copper	SM 3111B	0.05 Cu	\$16.00
	GFAA	0.001 Cu	\$26.00
Fluoride	EPA 300.1	0.25 F	\$31.00
	IC	0.005 F	\$31.00
Formate	IC	0.005 HCO <sub>2</sub>	\$31.00
Glycol, Ethylene	Colormetric	1 ppm HOCH <sub>2</sub> CH <sub>2</sub> OH	\$31.00
Hardness, Total (Ca + Mg)	FAA	0.2 CaCO <sub>3</sub>	\$32.00
	GFAA	0.010 CaCO <sub>3</sub>	\$52.00
Iron	SM 3111B	0.05 Fe	\$16.00
	GFAA	0.002 Fe	\$26.00
Lead	SM 3111B	0.5 Pb	\$16.00
	GFAA	0.005 Pb	\$26.00



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**IC** - Ion Chromatography

**FAA** - Flame Atomic Adsorption Spectroscopy

**GFAA** - Graphite Furnace Atomic Absorption  
Spectroscopy

**NPOC** - Nonpurgable Organic Carbon

**N.D.** - Not Determined

**Note** - \$15.00 Sample Preparation Charge May  
Apply For Samples Requiring Digestion,  
Filtration Or Dilution

Analysis	Method	Detection Limit (mg/L) As	Price
Magnesium	SM 3111B	0.05 Mg	\$16.00
	GFAA	0.001 Mg	\$26.00
Manganese	SM 3111B	0.5 Mn	\$16.00
	GFAA	0.010 Mn	\$26.00
Molybdenum	SM 3111D	0.5 Mo	\$16.00
Molybdate	Hach 8036	0.5 Mo <sup>+6</sup>	\$21.00
Nickel	SM 3111B	0.5 Ni	\$16.00
	GFAA	0.005 Ni	\$26.00
Nitrate	EPA 300.1	0.07 N	\$31.00
	IC	0.003 NO <sub>3</sub>	\$31.00
Nitrite	EPA 300.1	0.03 N	\$31.00
	IC	0.002 NO <sub>2</sub>	\$31.00
pH	SM 4500 H <sup>+</sup>	N/A	\$10.00
Phosphonate	Hach	1.0	\$26.00
Phosphorous, Total	Hach 8190	0.10 P	\$26.00
	Hach 8048	0.10 P	\$26.00
Phosphate, Ortho	EPA 300.1	0.3 PO <sub>4</sub>	\$31.00
	IC	0.010 PO <sub>4</sub>	\$31.00
	Hach	0.10 PO <sub>4</sub>	\$26.00
Potassium	SM 3111B	0.05 K	\$16.00
	GFAA	0.001 K	\$26.00
Propionate	IC	0.2 CH <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub>	\$31.00
Selenium	GFAA	N.D.	\$26.00
Silica, Soluble	SM 4500-SiO <sub>2</sub> D	0.005 SiO <sub>2</sub>	\$40.00
	Hach 8185	1 SiO <sub>2</sub>	\$26.00
	Hach 8186	0.010 SiO <sub>2</sub>	\$26.00
Silver	SM 3111B	1 Ag	\$16.00
	GFAA	0.005 Ag	\$26.00
Sodium	SM 3111B	0.5 Na	\$16.00
	GFAA	0.001 Na	\$26.00
Solids, Total Total Dissolved (TDS) And Total Suspended (TSS)	--	--	\$40.00
	SM 2540 C	10	Included
	SM 2540 D	4	Included
Sulfate	EPA 300.1	0.3 SO <sub>4</sub>	\$31.00
	IC	0.002 SO <sub>4</sub>	\$31.00
Titanium	SM 3111D	1 Ti	\$16.00



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# Water Analyses

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**Hach** - Hach Company Water Analysis Method

**IC** - Ion Chromatography

**FAA** - Flame Atomic Adsorption Spectroscopy

**GFAA** - Graphite Furnace Atomic Absorption Spectroscopy

**NPOC** - Nonpurgable Organic Carbon

**N.D.** - Not Determined

**Note** - \$15.00 Sample Preparation Charge May Apply For Samples Requiring Digestion, Filtration Or Dilution

Analysis	Method	Detection Limit (mg/L) As	Price
TOC (NPOC)	SM 5310 C ASTM D 4779 EPA 415.2	0.010	\$42.00
TOC + TIC	SM 5310 C ASTM D 4779 EPA 415.2	0.010	\$62.00
Tolyltriazole	Hach	I	\$26.00
Turbidity	EPA 180.1	I NTU	\$26.00
Vanadium	SM 3111D GFAA	I V 0.05 V	\$16.00 \$26.00
Zinc	SM 3111B GFAA	0.05 Zn 0.005 Zn	\$16.00 \$26.00

## Sample Bottles

Provision Of Pretreated Bottles For High Purity Water Samples Is Available At The Following Rates. These Prices Do Not Include Shipping Charges, Which Are Billed At Cost. Shipping Is Provided Via UPS.

Qty	Description	Volume	Price
I	Pretreated Sample Bottle	125 mL	\$5.00
I	Pretreated Sample Bottle	250 mL	\$7.50
I	Pretreated Sample Bottle	500 mL	\$10.00



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# Ion Chromatography

**EPA** - Methods For Chemical Analysis Of Water  
And Wastes, EPA-600/4-79-020, March 1983

**IC** - Ion Chromatography

**Note** - Method Development For Additional  
Anions Or Unusual Matrices Available Upon  
Request

Constituent And Analysis	Method	Detection Limit (mg/L) As	Price
Acetate	IC	0.005 CH <sub>3</sub> CO <sub>2</sub>	\$31.00
Bromate	IC	0.3 BrO <sub>3</sub>	\$31.00
Bromide	EPA 300.1	0.2 Br	\$31.00
	IC	0.003 Br	\$31.00
Chlorate	EPA 300.1 B	0.10 ClO <sub>3</sub>	\$37.00
Chloride	EPA 300.1	0.1 Cl	\$31.00
	IC	0.002 Cl	\$31.00
Chlorite	EPA 300.1 B	0.10 ClO <sub>2</sub>	\$37.00
Fluoride	EPA 300.1	0.25 F	\$31.00
	IC	0.005 F	\$31.00
Formate	IC	0.005 HCO <sub>2</sub>	\$31.00
Nitrate	EPA 300.1	0.3 N	\$31.00
	IC	0.003 NO <sub>3</sub>	\$31.00
Nitrite	EPA 300.1	0.2 N	\$31.00
	IC	0.003 NO <sub>2</sub>	\$31.00
Perchlorate	IC	0.010 ClO <sub>4</sub>	\$31.00
Phosphate, Ortho	EPA 300.1	0.3 PO <sub>4</sub>	\$31.00
	IC	0.010 PO <sub>4</sub>	\$31.00
Propionate	IC	0.2 CH <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub>	\$31.00
Sulfate	EPA 300.1	0.3 SO <sub>4</sub>	\$31.00
	IC	0.003 SO <sub>4</sub>	\$31.00



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# Chemical Cleaning Solvent Analyses

**ASTM** - American Society For Testing And  
Materials

**STPA** - Sheppard T. Powell Associates, LLC  
Procedure

**FAA** - Flame Atomic Absorption Spectroscopy

**SM** - Standard Methods For Examination Of  
Water And Wastewater. 20th Edition, 1998

◆ **SM 3111B** - Direct Air - Acetylene FAA  
Method

◆ **SM 3111D** - Nitrous Oxide - Acetylene FAA  
Method

**Note:**

**Sample Preparation** - \$15.00 (May  
Include Filtration, Dilution And/Or Digestion)

Analysis	Method	Price
Alkalinity	SM 2320	\$26.00
Aluminum	SM 3111 D	\$16.00
Ammonia	ASTM D2790	\$26.00
Bromate	ASTM D2790	\$31.00
Calcium	SM 3111 D	\$16.00
EDTA	STPA	\$31.00
Chromium	SM 3111 D	\$16.00
Conductivity	SM 2510 B	\$16.00
Copper	SM 3111 B	\$16.00
HAF Acid	ASTM D2790	\$26.00
Hydrochloric Acid	ASTM D2790	\$26.00
Iron	SM 3111 B,D	\$16.00
Lead	SM 3111 B	\$16.00
Magnesium	SM 3111 B	\$16.00
Manganese	SM 3111 B	\$16.00
Nickel	SM 3111 B	\$16.00
Permanganate	STPA	\$31.00
pH	Electrode	\$10.00
Silica	3111 D	\$16.00
Zinc	SM 3111 B	\$16.00



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# Chemical Laboratory Evaluations

**ASTM** - American Society For Testing And  
Materials

**STPA** - Sheppard T. Powell Associates, LLC  
Procedure

**FAA** - Flame Atomic Absorption Spectroscopy

**SM** - Standard Methods For The Examination Of  
Water And Wastewater

**Note:**

**Sample Preparation** - \$15.00 (May  
Include Filtration, Dilution And/Or Digestion)

\* Plus The Cost Of Chemical Cleaning Solvent  
Analyses

**Chemical Cleaning Simulation** (Laboratory  
Evaluation Of Prospective Cleaning Solvents And Process  
Conditions)

First Stage/Day

Call For Exact Quotation

\$400.00\*

Subsequent Stages/Days

\$300.00\*

**Corrosion Coupons** (Preparation, Cleaning And  
Weighing Of Corrosion Coupons And Determination Of  
Corrosion Rates)

Call For Quotation

**Special Chemical Analyses** (Following Client  
Procedures Or Procedures Developed By STPA)

Call For Quotation



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## Recommended Sampling And Preservation

### Water Samples

Analysis	Volume Required (mls)	Preservation	Holding Time
Acidity	100	Cool, 4°C	14 Days
Alkalinity	100	Cool, 4°C	14 Days
Ammonia	400	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> , pH <2	28 Days
BOD	1,000	Cool, 4°C	48 Hours
Bromide	100	None Required	28 Days
COD	50	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> , pH <2	28 Days
Chloride	100	None Required	28 Days
Chlorine	200	None Required	Analyze Immediately
Color	50	Cool, 4°C	48 Hours
Conductivity	100	Cool, 4°C	28 Days
Fluoride	100	None Required	28 Days
Hardness	100	HNO <sub>3</sub> , pH <2	6 Months
Hydrazine	100	None Required	Analyze Immediately
Metals			
Dissolved	200	Filter On Site, HNO <sub>3</sub> , pH <2	6 Months
Suspended	200	Filter On Site	6 Months
Total	100	HNO <sub>3</sub> , pH <2	6 Months
Nitrate	100	Cool, 4°C	48 Hours
Nitrite	100	Cool, 4°C	48 Hours
pH	50	None Required	Analyze Immediately
Phosphonate	100	None Required	Analyze Immediately
Phosphorous, Total	200	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> , pH <2	28 Days
Phosphate, Ortho	100	Cool, 4°C	48 Hours
Silica, Soluble	250	Cool, 4°C	28 Days
Solids	100	Cool, 4°C	7 Days
Sulfate	100	Cool, 4°C	28 Days
TOC / TIC / NPOC	100	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> , pH <2	28 Days
Triazole	100	None Required	Analyze Immediately
Turbidity	100	Cool, 4°C	48 Hours



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