



PACS - Activated Carbon Services, Inc.  
 Lab Testing - Consulting - Education  
 409 Meade Drive  
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 +1-724-457-6576 / +1-412-334-0459  
 George Nowicki, Lab Manager: George@pacslabs.com  
 Rich Capp, Office Administrator: Rich@pacslabs.com

## PACS Price List

12/2019

**NOTE: Prices are subject to change**  
 See pacslabs.com/laboratory-services-and-consulting

### Laboratory Test Packages

Cost (US \$)	Cost (US \$)	Cost (US \$)
<b>ACTIVATED CARBON ASTM TEST PACKAGE</b> <ul style="list-style-type: none"> <li>Received and Dry Apparent Density (AD)</li> <li>ASTM Particle Size Screening (PSD); Hardness or Abrasion Number,</li> <li>Total Ash, Dean-stark moisture, Iodine or Butane Capacity Number</li> </ul>	\$1125	<b>ADVANCED Carbon PERFORMANCE Testing Best Available Technology</b> <ul style="list-style-type: none"> <li>Gravimetric Adsorption Energy Distribution (GAED) aqueous or vapor</li> </ul>
<b>REMAINING CARBON SERVICE TIME TEST PACKAGE</b> <ul style="list-style-type: none"> <li>Received and Dry Apparent Density (AD), Moisture, Iodine or Butane Capacity Number, Heat-of-Immersion</li> </ul>	\$620 (plus \$620 control)	<b>AC FEEDSTOCKS CHEMICAL CHARACTERIZATION TEST PACKAGE</b> <ul style="list-style-type: none"> <li>Mercury, Chromium, Antimony, Arsenic, Lead</li> <li>Total Ash,</li> <li>Major/Minor Elements in Ash, PIXE,</li> <li>Proximate/Ultime Groups,</li> <li>DOT UN Auto-Ignition and Self-heating tests</li> </ul>
		<b>AC GOLD APPLICATION TEST PACKAGE</b> <ul style="list-style-type: none"> <li>Hardness,</li> <li>Gold Platelet,</li> <li>Dust Attrition,</li> <li>K Capacity,</li> <li>R Adsorption Rate,</li> <li>Apparent Density</li> </ul>
		<b>AC Feedstock Concept to Plant:</b> <ul style="list-style-type: none"> <li>Small scale charring and activation family of six products and lab testing Cost \$8,500 USD,</li> <li>Market SURVEY Cost \$12,000,</li> <li>Material Safety Data Document Cost \$10,000,</li> <li>Pilot scale and process development for samples to buyers Cost \$21,000</li> <li>Plant design Cost case-by-case evaluations</li> </ul>

### Individual Lab Testing Methods

Cost (US \$)	Cost (US \$)	Cost (US \$)
AD Received and Dry and oven moisture	\$80	Molasses AC Decolorization \$395
Tamped AD, powder	\$105	Methylene Blue Decolorization \$895
Dean-stark moisture	\$185	Mercury in fly ash or activated carbon - method 7471A or 1631A \$495
ASTM Particle Size Screening (PSD)	\$195	GAC Dechlorination Capacity \$995
Laser Micron Particle Size Distribution	\$395	ASTM Ignition Temperature \$975
Ball-Pan Hardness or Abrasion Number - sample prep requires PSD	\$275	DOT UN Auto-Ignition and Self-heating tests \$875
Total Anions	\$995	DOT UN Auto-Ignition and Self-Heating tests and ASTM Ignition Temperature (1740) (Save \$85) \$1765
Total Ash	\$160	Specific Gravity \$215
Major and Minor Elements in Ash	\$995	Chloramine Capacity \$1050
Acid Soluble Ash or Water Soluble Ash	\$295	Wetability \$695
Acid Soluble Iron or Arsenic or other metals	\$325	Pressure Drop \$895
Iodine Capacity Number	\$230	Sulfur, Sulfide, Cyanide, Phosphate, or Nitrogen \$290
Butane Capacity Number	\$230	Four Sulfur Species \$525
Geosmine, MIB	\$900	True pH or Contact pH \$295
Bromide Level on Carbon	\$395	Acidic and Basic Groups (meq/g) \$690
Butane Working Capacity (BWC)	\$275	Lab Sized Rotary Kiln Runs Each (not including analytical) \$810
Carbon Tetrachloride Activity (CTC)	\$235	Phenol Activity Value \$850
Benzene or Toluene Capacity Number	\$280	Tannin Activity Value \$860
Remaining Carbon Service Time	\$520	
Heat-of-Immersion	\$215	
		Gold Platelet Content \$645
		Dust Attrition Test for GAC \$895
		K Value Gold AC Adsorptive Capacity \$1995
		R Value Gold Adsorption Rate \$1895
		EPA Toxicity Characteristic Leaching Procedure (TCLP) Semi-Volatiles \$1950
		EPA Toxicity Characteristic Leaching Procedure (TCLP) Volatiles \$1495
		EPA Toxicity Characteristic Leaching Procedure (TCLP) Metals \$1395
		Thermal or Solvent Used AC Regeneration Lab Scale Evaluation \$2300
		Volatile Matter Loss on Ignition (LOI) \$260
		Fixed Carbon \$300
		Lab Scale Steam Activation 1750°F and 15 psi Steam Family of (5) Products + Testing \$4050
		Lab Scale Chemical Activation Acid or Base \$3600
		3D Carbon Services Quote
		KG Production Scale Activation Quote
		<b>Ultimate Test Package:</b> Moisture, Volatile Matter, Fixed Carbon and BTU \$795
		<b>Proximate Test Package:</b> Carbon, Hydrogen, Nitrogen, Oxygen, Sulfur \$850

Advanced Carbon Testing Methods  
 on the following page

## PACS Services Pre-Payment

All projects require prepayment. PACS accepts checks, credit cards or direct bank payments.  
 PACS adds 3% to total cost for credit card purchases. Notify Barb@pacslabs.com 412.639.5806 if you will pay by credit card.

## PACS Lab Turnaround Time (TAT) is based upon the date samples are received

Present PACS laboratory TAT status and more information is available at pacslabs.com/turnaround-time  
 Please call for updated information on the availability of Priority TAT (1.5x LIST COST) and RUSH TAT (2.0x LIST COST)



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Advanced Carbon Testing Methods			
	Cost (US \$)		Cost (US \$)
GRAVIMETRIC ADSORPTION ENERGY DISTRIBUTION (GAED aqueous)	\$1450	TCN Tetrafluoromethane Method	\$1250
GRAVIMETRIC ADSORPTION ENERGY DISTRIBUTION (GAED vapor)	\$1550	Mini-Column AC Performance Evaluation (RSSCT) (not including analytical)	\$4700
U.S. Food Chemical Codex Testing	\$3700	Liquid Samples 10 point Isotherm AC Performance (not including analytical)	\$4300
Catalytic Carbon Hydrogen Peroxide	\$895	Thermogravimetric (TGA) Sample Analysis	\$810
Trace Capacity Number (TCN) Acetoxime Method Estimated	\$995	GC/MS Adsorbates B/N/A/P Characterization	\$1970
		GC/MS Adsorbates VOC Characterization	\$1595
		24 ICP Metals AC Adsorbates	\$990
		BET Surface Area Analysis 10-point/N2 Adsorption Isotherm	\$910
		Small Pore Size Distribution and Pore Volume Analysis	\$995
		Skeletal Helium Density	\$715
		Mercury Porosimetry for Large Pores or Adsorption Spaces	\$995
		PIXE Chemical-Analysis	\$1050
Vapor Phase Sorption Testing Methods			
	Cost (US \$)		Cost (US \$)
Hydrogen Sulfide or Sulfur Dioxide Capacity	\$1190	Carbon Vapor Mercury Capacity	\$1700
		Other Vapor Challenges and R&D	Quote
Activated Carbon School Courses			
	Cost (US \$)		Cost (US \$)
Activated Carbon Principles, GAED, Practices and Opportunities	\$1250	Design, Operation, and Troubleshooting of Activated Carbon Liquid and Vapor Phase Systems	\$1250
		Activated Carbon Production and Sales	\$1250
		Pressure Swing Adsorption and other Cyclic Adsorption Processes and Applications	\$2250
		BioMass to BioChar: Renewable Carbonaceous Products	\$1250
PACS Electrochemical Carbon Testing Services			
	Cost (US \$)		Cost (US \$)
BET Surface Area	\$895	Energy Density	\$995
Conductivity/Resistance	\$695	Power Density	\$995
Electrochemical Capacitance	\$995	Cycle-Life	\$995
Electrical Series Resistance (ESR)	\$995	Separation of Pseudocapacitance from Capacitance	\$4995
Self-Discharge	\$1995		
		Determination of Pressure During Cycling	\$9995
		Analysis of Electrolytes	\$4995
		Evaluation of Electrodes after Cycling	\$995
		Prototype Development (100 F)	\$25000
		Custom Electrodes for Energy Storage	\$995
Contracted R&D Miscellaneous Activated Carbon Products			
	Cost (US \$)		Cost (US \$)
Telephone and Internet Written Consulting	\$90 per quarter hour	Gravimetric Adsorption Energy Distribution (GAED) Instrumentation	\$150000
Exclusive Consulting Service Agreement (ECSA)	\$1,500 per day	Carbon Standards: Molasses, Iodine, Butane, CTC, Mercury	\$595 EACH
Siting a carbon plant construction - operation costs	Quote	AC Tester Manual Instrument Heat of Immersion	\$295
R&D, new test methods or process development	Quote	Advertise your product: E-advertising	\$1,495 + editorial services
		Activated Carbon Software Programs	\$9000
		AC Conference Proceedings	\$235
		Include non-attendeo marketing into AC Conference Proceedings	\$195
		Bi-annual International Activated Carbon Conferences Registration Fee Orlando FL and Pittsburgh, PA	\$1495 early-bird
Litigation Support & Short Courses			
	Cost (US \$)		Cost (US \$)
Office Litigation Support	\$375 per hour	Depositions and Courtroom	\$450 per hour
		Travel Time	\$90 per hour + Expenses
		PACS Courses - 32 courses, 7 on activated carbon	One day \$1250 Two days \$2250

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