



Analytical Services

TECHNICAL SERVICES



In conjunction with Siebel Institute Laboratory Services, White Labs offers the industry's most complete range of brewing-related tests. Tests are conducted using the strictest standards employing methods prescribed by the American Society of Brewing Chemists and AOAC. Many countries require TTB certified lab documentation for export of alcohol products and White Labs has several certified TTB beer chemists on staff. The lab participates in quarterly check sample service to assess accuracy and quality control within the lab which allows White Labs to be confident in the data we are providing our customers. White Labs conducts test and delivers results in a prompt manner, providing customers with information that is both timely and accurate.

ANALYTICAL EQUIPMENT

Anton Paar Alcolyzer ME and Density Meter ME 5000 HazeQC ME Turbidity Meter

Together, our Anton Paar Density Meter, Alcolyzer, and HazeQC meter will reliably determine the alcohol content in beer and spirits. Additionally, these highly complex instruments can determine specific gravity, extract values, attenuation, pH, color, calories and chill haze.



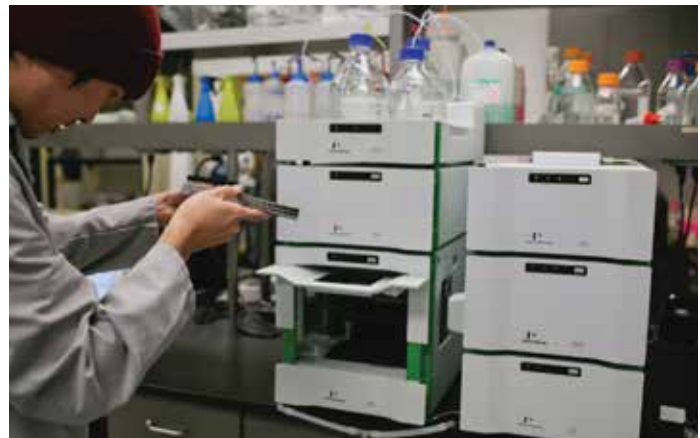
Perkin Elmer Clarus 500 and TurboMatrix 110 Headspace Unit

Our top of the line Gas Chromatograph can analyze off flavors such as diacetyl and 2,3 pentanedione. It can also detect esters and fusels such as isoamyl acetate, ethyl acetate, acetaldehyde, methanol, isobutanol and acetone.



Perkins Elmer Flexar

Our HPLC can analyze sugars, acids, caffeine and more. New methods are added monthly.



Analytical Services & Testing

Beer
Wine / Mead / Cider
Spirits
Kombucha
Malt / Adjuncts
Hops
Water

| Product | Price | Description | Beer | Wine / Mead / Cider | Spirits | Kombucha | Malt / Adjuncts | Hops | Water |
|---|-------|--|------|---------------------|---------|----------|-----------------|------|-------|
| LS3010 Methanol | \$91 | Method: Gas Chromatograph. Results reported in ppm. | ● | ● | ● | ● | | | |
| LS3410 Ethyl Acetate | \$63 | Method: Gas Chromatograph. Results reported in ppm. | ● | ● | ● | ● | | | |
| LS3450 Distillation Profile | \$141 | Analysis includes ethyl acetate, 1-propanol, acetaldehyde, isoamyl alcohol, isoamyl acetate, acetone, ethyl butyrate, isobutyl acetate, methanol and isobutanol. Method: Gas Chromatograph. Results reported in ppm. | | | ● | | | | |
| LS3600 Gluten | \$92 | Method: R5-Competitive Gliadin ELISA assay. Results reported in ppm. | ● | ● | ● | ● | | | |
| LS4000 Free SO ₂ | \$16 | Method: Aeration oxidation. Results reported in mg/L. | | ● | | | | | |
| LS4010 Carbon Dioxide | \$22 | CO ₂ by Titration method is used when a bottle is not able to be pierced. This method is less accurate than the piercing apparatus, but still beneficial. | ● | | | | | | |
| LS4030 Malic Acid | \$17 | Analyze the amount of malic acid in wine before, during, or after malolactic fermentation. Method: Enzymatic. Results reported in mg/L. | | ● | | ● | | | |
| LS4040 Lactic Acid | \$32 | Method: Enzymatic. Results reported in mg/L. | ● | ● | | ● | | | |
| LS4050 YAN (Yeast Assimilable Nitrogen) | \$27 | YAN is important when determining quality of must and how much nutrient addition is necessary. Method: Enzymatic. Results reporting in mg/L. | | ● | | | | | |
| LS4060 Glucose/ Fructose | \$17 | Analyze wine for residual reducing sugars. Method: Enzymatic. Results report in g/L. | | ● | | | | | |
| LS4070 Comprehensive Testing for Wine & Cider | \$71 | Analysis includes titratable acidity, pH, SO ₂ , alcohol by volume, malic acid and Brix. | | ● | | | | | |
| LS4071 Juice Analysis | \$55 | Great panel for grape and apple must. Analysis includes titratable acidity, pH, Brix, YAN and malic acid testing. | | ● | | | | | |
| LS6600 Sediment Analysis | \$113 | Great test for issues with unusual haze or sediment in product. Typical analysis looks for dead yeast, alive yeast, oxalate crystals, protein and lipids. Sample is centrifuged and stained with Eosin Y and Thionin. Photos from microscopy and report of suspected sediments are included. | ● | ● | | ● | | | |
| LS6605 Full Process Microbiological Analysis | \$450 | Great test to find out where contaminants are entering in your brewery. Test your entire process- pre/post chiller, fermentors, brite tanks, hoses, rinse water, fillers, bottles, etc. Up to 10 samples can be submitted. Analysis Includes WLD, LCSM, HLP and SDA selective media testing. Also includes Gram stain and genus identification of any positive contaminants. | ● | ● | | | | | |
| LS6610 Complete Microbiological Analysis | \$148 | Analysis Includes WLD, LCSM, HLP and SDA selective media testing. Also includes Gram stain and genus identification of any positive contaminants. | ● | ● | | | | | |

SERVICES

| Product | Price | Description | | | | | | | | |
|---|--------|--|------|---------------------|---------|----------|-----------------|------|-------|--|
| | | | Beer | Wine / Mead / Cider | Spirits | Kombucha | Malt / Adjuncts | Hops | Water | |
| LS6620 Complete QC Analysis | \$290 | Great panel for a comprehensive look at finished product. Analysis includes microbiological testing (WLD, LCSM and HLP selective medias), alcohol by volume and weight, extract values, attenuation, specific gravity, calories, pH, color, IBU, diacetyl and 2,3 pentanedione. | ● | | | | | | | |
| LS6643 Nutritional Label Analysis | \$635 | Analysis needed to create a nutritional label for your product. Analysis includes alcohol by volume and weight, extract values, attenuation, specific gravity, calories, pH, color, protein, total carbohydrates, cholesterol, total fat, calories from fat, trans fat, saturated fat, iron, calcium, sodium, sugar and dietary fiber. Results reported per 12 fl. oz. serving size. | ● | ● | | ● | | | | |
| LS6644 Nutritional Beer Analysis | \$141 | Analysis includes alcohol by volume and weight, extract values, attenuation, specific gravity, calories, pH, color, protein and total carbohydrates. | ● | ● | | ● | | | | |
| LS6645 Calories | \$81 | Results reported as calories/12oz. | ● | ● | | ● | | | | |
| LS6646 ABV/ABW | \$26 | Alcohol by volume and alcohol by weight. Method: Anton Paar Beer Alcolyzer and DMA 5000 (default) or Gas Chromatograph. | ● | ● | ● | ● | | | | |
| LS6660 Brix | \$14 | Brix measured by Anton Paar Density Meter. | ● | ● | | ● | | | | |
| LS6670 Sugar Profile by HPLC | \$166 | Analysis includes glucose, fructose, lactose, maltose and sucrose. Method: HPLC. Results reported in percent. | ● | ● | | ● | | | | |
| LS6671 Viability | \$46 | Viability analysis of yeast slurry. Method: methylene blue. | | | | | | | | |
| LS6672 Fat | \$43 | Method: Acid hydrolysis. Results reported in percent. | ● | ● | | ● | | | | |
| LS6705 Genetic Identification | \$139 | Genetic sequencing of isolated bacteria or yeast. In most cases we are able to identify both genus and species of the organism. In bacteria, the 16S rDNA region is sequenced and for yeast, the ITS region is sequenced. Results will be reported in a percent confidence level of the closest organism. | | | | | | | | |
| LS6725 Mixed Culture Isolation | \$505 | Includes isolation of multiple organisms, organisms identified to the genus level (i.e. <i>Saccharomyces</i> -type yeast, non- <i>Saccharomyces</i> -type yeast, anaerobic bacteria, aerobic bacteria) and the ratio of the organisms in the culture. Can be banked as a mixed culture or as individual strains for an additional fee. | ● | ● | | ● | | | | |
| LS6730 Advanced Mixed Culture Isolation | \$1495 | Includes isolation of multiple organisms, genetic identification of the organisms (genetic sequencing of isolated bacteria or yeast, in bacteria the 16S rDNA region is sequenced and for yeast the ITS region is sequenced) and the ratio of the organisms in the culture. Can be banked as a mixed culture or as individual strains for an additional fee. | ● | ● | | ● | | | | |
| LS6910 Kombucha: Final Product Testing | \$52 | Analysis includes alcohol by volume via Gas Chromatograph, titratable acidity, pH and total yeast and mold (CFU/ml). | | | | ● | | | | |

Beer
Wine / Mead / Cider
Spirits
Kombucha
Malt / Adjuncts
Hops
Water

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|---|-------|---|------|---------------------|---------|----------|-----------------|------|-------|
| LS6920 Kombucha: Advanced Package | \$179 | Analysis includes organic acid profile (gluconic, acetic, lactic and malic acid), alcohol by volume via Gas Chromatograph, titratable acidity, pH, total yeast and mold (CFU/ml), total aerobic bacteria count (CFU/ml) and pathogens (<i>Staphylococcus aureus</i> , Enteric bacteria). | | | | ● | | | |
| LS6930 Kombucha: Shelf Life Testing | \$518 | Analysis includes alcohol by volume via Gas Chromatograph, titratable acidity, pH, total yeast and mold (CFU/ml), total aerobic bacteria count (CFU/ml) and CO ₂ (if applicable). Testing is performed at 0, 30, 60, 90, 180 and 240 days. | | | | ● | | | |
| LS9014 Caffeine | \$130 | Method: HPLC. Results reported in percent. | ● | ● | | ● | | | |
| SIT0001 Fast Track Testing | \$136 | Get a range of our most requested services conducted on a fast-turnaround basis with accurate results sent back to you in 2 business days. Analysis includes alcohol by volume and weight, extract values, attenuation, specific gravity, calories, pH, color and IBU. | ● | | | | | | |
| SIT0011 Comprehensive Analysis for Packaged Beer | \$170 | Analysis includes alcohol by volume and weight, extract values, attenuation, acidity, pH, SO ₂ , IBU, color, specific gravity, calories, CO ₂ and air. | ● | | | | | | |
| SIT0021 Comprehensive Analysis for Packaged Beer with Protein | \$200 | Analysis includes alcohol by volume and weight, extract values, attenuation, acidity, pH, SO ₂ , IBU, color, specific gravity, calories, CO ₂ , air and protein. | ● | | | | | | |
| SIT0031 Comprehensive Flavor Profile | \$214 | Analysis includes diacetyl, 2, 3 pentanedione, ethyl acetate, 1-propanol, acetaldehyde, isoamyl alcohol, isoamyl acetate, ethyl octanoate, ethyl hexanoate, acetone, methanol and isobutanol. Method: Gas Chromatograph. Results reported in ppm or ppb. | ● | ● | | ● | | | |
| SIT0033 Acetaldehyde | \$64 | Method: Gas Chromatograph. Results reported in ppm. | ● | ● | ● | ● | | | |
| SIT0040 Titratable Acidity | \$24 | Method: Titration. Results reported in g/L. | | ● | | ● | | | |
| SIT0040 Total Acidity | \$24 | Method: Titration. Results reported in percent lactic acid. | ● | | | | | | |
| SIT0050 Alcohol, Extract and Calculated Values | \$55 | Analysis includes alcohol by volume and weight, calories, specific gravity, apparent extract, real extract, color, original extract, apparent attenuation, real degree attenuation and pH. Method: Anton Paar Alcolyzer and DMA5000. | ● | ● | | ● | | | |
| SIT0070 IBU Testing | \$39 | Method: Spectrophotometer. Results reported in BU (Bitterness Units). | ● | | | | | | |
| SIT0080 Calcium | \$36 | Method: ICP. Results reported in ppm. | ● | ● | | ● | | | ● |
| SIT0090 Total Carbohydrates | \$66 | Method: ASBC calculation from extract, protein and ash. Results reported in g/12 fl. oz. | ● | ● | | ● | | | |

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|---|-------|--|------|---------------------|---------|----------|-----------------|------|-------|
| SIT0091 Carbohydrate Sugar Profile by HPLC | \$287 | This analysis gives a break down of the unfermentables (carbohydrates) in beer or wort samples. Analysis includes dextrans, maltriose, maltose, glucose and glycerol. Method: HPLC. Results reported in percent. | ● | | | | | | |
| SIT0110 Chill Haze Testing | \$25 | In this analysis one bottle is heated for one week to mimic one month of shelf life. Chill haze is analyzed at 4°C and reported from fresh and abused bottles. Method: Anton Paar Turbidity Meter. | ● | | | | | | |
| SIT0120 CO ₂ and Air | \$47 | Method: Zahm & Nagel piercing apparatus. CO ₂ is reported in volumes and air is reported in cc. | ● | ● | | ● | | | |
| SIT0130 Color | \$25 | Method: Anton Paar Alcolyzer or spectrophotometer. Results reported in SRM. | ● | ● | | ● | | | |
| SIT0140 Diacetyl | \$90 | Method: Gas Chromatograph. Results reported in ppb. | ● | ● | ● | ● | | | |
| SIT0200 FAN | \$69 | Free amino nitrogen. Method: Colormetric. Results reported in mg/L. | ● | | | | | | |
| SIT0270 pH | \$14 | Acidity. | ● | ● | ● | ● | | | ● |
| SIT0291 Protein (Total) | \$52 | Method: Spectrophotometer. Results reported in percent or g/12oz. | ● | ● | | ● | | | |
| SIT0320 Total SO ₂ | \$38 | Method: Enzymatic. Results reported in ppm. | ● | ● | | ● | | | |
| SIT0350 Yeast Fermentable Extract (Y.F.E.) | \$75 | Helpful in determining the final gravity of a beer. Results reported in percent. | ● | | | | | | |
| SIT1000 Barley Comprehensive Analysis | \$98 | Analysis includes moisture, protein, plumpness, kernel weight, germination energy, RVA and DON. | | | | | ● | | |
| SIT3000 Moisture | \$24 | Moisture analysis of hops. Results reported in percent. | | | | | | ● | |
| SIT3010 Alpha and Beta Acids | \$57 | Alpha and beta acids of hops. Method: HPLC. Results reported in percent. | | | | | | ● | |
| SIT3060 Hop Oil Profile | \$165 | Volatile oil profile. Analysis include humulene, caryophyllene, myrcene, farnesene, linalool, geraniol and pinene. Results reported in percent. | | | | | | ● | |
| SIT3110 Total Essential Oils | \$45 | Total oil content in hops. Results reported in percent. | | | | | | ● | |
| SIT4000 Malt Comprehensive Analysis | \$195 | Analysis includes moisture, assortment, friability, fine extract, coarse extract, F/C difference, β-glucan, FAN, soluble protein, S/T, diastatic power, α-amylase, color, filtration time and clarity. | | | | | ● | | |
| SIT4005 Basic Malt Analysis | \$114 | Analysis includes moisture, friability, fine extract, β-glucan, FAN, diastatic power, α-amylase, color, filtration time and clarity. | | | | | ● | | |
| SIT4010 Malt Enzyme Analysis | \$75 | Analysis includes diastatic power and α-amylase. | | | | | ● | | |

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|---|-------|--|------|---------------------|---------|----------|-----------------|------|-------|
| SIT4015 Specialty Malt Analysis | \$33 | Analysis for high-dried, chocolate and roasted malt. Analysis includes moisture, extract and color. | | | | ● | | | |
| SIT6000 Water or Wort Comprehensive | \$101 | Analysis includes pH, total dissolved solids, cations/ anions, sodium, potassium, calcium, magnesium, total hardness, nitrate, sulfate, chloride, carbonate, bicarbonate, total alkalinity, total phosphorus and total iron. | ● | | | | | | ● |
| SIT9001 Zinc | \$42 | Method: ICP. Results reported in ppm. | ● | ● | | ● | | | ● |
| SIT9025 Iron | \$57 | Method: ICP. Results reported in ppm. | ● | ● | | ● | | | ● |

Bundled Test Kits

LSQCDayStandard | Big QC Day Kit | \$139 | Purchase this bundled kit and save! Test for diacetyl, IBUs, alcohol content, calories, SRM, attenuation (real and apparent), microbiological contaminants and more. Results depend on submission deadline and will be provided based on predetermined dates. To view dates visit whitelabs.com/bigqcday. This kit requires you to send your samples to White Labs in the provided sample bottle. Return FedEx shipping label is included.

LSQCDayGluten | Big QC Day Kit with Gluten Testing | \$199 | All the same great tests and savings as LSQCDayStandard, plus analysis for gluten. Results depend on submission deadline and will be provided based on predetermined dates. To view dates visit whitelabs.com/bigqcday. This kit requires you to send your samples to White Labs in the provided sample bottle. Return FedEx shipping label is included.

ANALYSIS REQUEST FORM

DATE: _____

CUSTOMER INFORMATION

COMPANY: _____

CONTACT NAME: _____

ADDRESS: _____

PHONE: _____

EMAIL: _____

PAYMENT: CHECK P.O.

CC NUMBER: _____

EXP DATE: _____



PURE YEAST & FERMENTATION



| SAMPLE # | PART NUMBER | TEST NAME | SAMPLE DESCRIPTION |
|----------|-------------|-----------|--------------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |

NOTES:

SHIPPING ADDRESS:

White Labs

Attn: Analytical Lab

9450 Candida St. San Diego, Ca 92126

Questions? Email: AnalyticalLab@whitelabs.com Phone: (858) 693- 3441 ext 7387