

Wine and Alcoholic Beverage Testing

Analytical measurement can be a vital part of beverage testing. Hill Labs offers you a suite of testing for every stage in wine production, juice (must testing), Spirits, Beer, Cider, and Kombucha Testing.

Export Wine Testing (Blenheim site)

- EU Suite for bulk, 0% or partially dealcolysed (includes titratable acidity to pH 7.0, actual alcohol, total alcohol, volatile acidity, sugars as glucose and fructose, total sulphur dioxide, total dry extract and citric acid).
- EU for packaged wine (includes titratable acidity to pH 7.0, actual alcohol, total sulphur dioxide and sugars as glucose and fructose).
- Japan Suite (includes EU suite + Sorbic Acid).
- Brazil Suite (includes EU Suite + titratable acidity to pH 8.2, reduced dry extract, methanol*, and total sulfate as $K_2SO_4^*$).
- Brazil top up suite. If the EU suite has already been tested, this can be added. (includes titratable acidity to pH 8.2, methanol*, reduced dry extract and total sulfate as $K_2SO_4^*$)
- China, if testing is not specified, the EU suite will be tested.
- Korea, if specific testing is not requested total sulphur dioxide will be tested.

Please Note: Samples requiring a WECS upload to MPI must be sealed, unopened and include the bottle fillers or winemaker reference, batch number, vintage, and wine company. If this is not included your sample may be rejected.

* Methanol and total sulfate are performed at our Hamilton site.

Additional Wine, Juice, Beer, Cider and Sprit Testing

Method	Matrix					Lab Site		
	Wine	Grape Juice (must)	Beer & Cider	Spirits	Kombucha	BLE	HAM	CHCH
Wine Panel (includes titratable acidity to pH 8.2, Actual alcohol, volatile acidity, sugars as glucose and fructose, free and total sulphur dioxide, malic and pH)	✓					✓		
Citric Acid	✓		✓	✓		✓		
Malic acid	✓	✓	✓	✓		✓		
Actual Alcohol (ABV%) by Anton Paar or distillation and then Anton Paar	✓		✓	✓	✓	✓		
Ethanol by GC-MS	✓		✓	✓	✓		✓	

Method	Matrix					Lab Site		
	Wine	Grape Juice (must)	Beer & Cider	Spirits	Kombucha	BLE	HAM	CHCH
Glucose/Fructose	✓	✓	✓	✓	✓	✓		
Allergens- Casein protein and Total Egg White Protein	✓					✓		
Total Acidity as Tartaric, pH 7 or 8.2	✓	✓	✓	✓		✓		
Volatile Acidity (Acetic Acid)	✓	✓	✓			✓		
pH	✓	✓	✓	✓	✓	✓		
Density	✓		✓	✓	✓	✓		
Specific Gravity	✓		✓	✓	✓	✓		
Total Dry Extract	✓		✓	✓		✓		
Free and Total Sulfur Dioxide	✓	✓	✓	✓		✓		
Overpressure (Gas Pressure)	✓		✓			✓		
Reduced Dry Extract								
(price for testing only, can be included in EU suite for free)	✓					✓		
Total Alcohol								
(price for testing only, can be included in alcohol testing for free)	✓		✓			✓		
Juice Panel								
(includes Brix, pH, YAN, Malic and Titratable acidity to pH 8.2)		✓				✓		
Basic Juice Minerals								
Includes: Total Nitrogen, Calcium, Magnesium, Potassium, Phosphorous, Sodium, Sulphur, Iron, Boron, Copper, Manganese and Zinc.	✓	✓					✓	
Brix	✓	✓	✓	✓		✓		
Yeast Assimilable Nitrogen		✓				✓		

Method	Matrix					Lab Site		
	Wine	Grape Juice (must)	Beer & Cider	Spirits	Kombucha	BLE	HAM	CHCH
Total Sulfate	✓						✓	
Multi residue – MR 1 Profile Includes: 230+ compounds	✓	✓	✓	✓			✓	
Multi residue – MR 2 Profile Includes: 120+ compounds	✓	✓	✓	✓			✓	
Multi residue– MR 3 Profile Includes: 350+ compounds	✓	✓	✓	✓			✓	
Ochratoxin A	✓						✓	
Hydraulic Oil, Benzene and general hydrocarbon contaminants	✓	✓					✓	
Glycol (Propylene Glycol)	✓	✓			✓		✓	
Ethylene Glycol					✓			
4-EP & 4-EG (Bretanomyces)	✓						✓	
Heavy Metals Profile (Grape Elements) Includes: Antimony, Arsenic, Bismuth, Cadmium, Copper, Lead, Mercury, Silver, Tin	✓	✓	✓	✓	✓		✓	
Methoxypyrazines	✓	✓					✓	
Thiols	✓	✓					✓	
Nutritional Panel (Includes: Moisture, Ash, Total Nitrogen, Total Protein, Total Fat, Saturated Fat, Total Carbohydrates, Soluble Carbohydrates (Sugars), Energy, Sodium, Fibre)	✓	✓	✓	✓	✓		✓	
Methanol	✓	✓	✓	✓	✓		✓	

Method	Matrix					Lab Site		
	Wine	Grape Juice (must)	Beer & Cider	Spirits	Kombucha	BLE	HAM	CHCH
Propyl Acetate	✓			✓			✓	
Ethyl Acetate	✓			✓			✓	
Acetone	✓			✓			✓	
Ethanol by GC-MS	✓			✓	✓		✓	
Propanol	✓			✓			✓	
Total Solids (DM%)	✓	✓	✓	✓	✓		✓	
Post Bottling Sterile Check	✓					✓	Some tests subcontracted	
Ascorbic Acid	✓	✓		✓	✓		Subcontracted	
Fatty acids including trans-fats and Omega 3, 6 and 9 [^]	✓	✓	✓	✓	✓		Subcontracted	
Benzoic Acid/Sodium Benzoate [^]	✓		✓		✓		Subcontracted	
Amino acids including L-theanine [^]	✓	✓	✓	✓	✓		Subcontracted	
Caffeine Analysis		✓			✓		Subcontracted	
Wine Micro-Lactic Acid by PCR	✓						Subcontracted	
Wine Micro-Yeast and Bacteria by Membrane Filtration.	✓						Subcontracted	
Wine Micro-Yeast, Bacteria and Brettanomyces by direct plating.	✓						Subcontracted	

The Different Types of Sulphur Testing in Wine at Hill Labs

Total sulphur dioxide (Sulfite) (Blenheim Testing-SO2_tBLdiscrete)

Sulfur dioxide is added to wines as a preservative against microbial activity and to prevent oxidation. Total sulfur dioxide forms part of the testing required for export to the European Union (EU). Maximum total sulfur dioxide limits apply for all wine types and range from 150 mg/L in red wines, to 400 mg/L for certain dessert wines.

Total sulfur dioxide in wines can be determined by the sulfite ion (SO_3^{2-}) reaction with aqueous phosphate buffer at pH 8 and Ellman's Reagent (5-5'-dithiobis-(2-nitrobenzoic acid)). The reaction cleaves the disulphide bond in the 5-5'-dithiobis-(2-nitrobenzoic acid) displacing the thiols and producing a chromophore (5-mercapto-2-nitrobenzoate). The sulfite is determined by measuring the absorption of thiol in a spectrophotometer at 420 nm.

Sulfate in Wine (Hamilton Waters General Testing-S04_as_K2SO4)

This method is the determination of quantitative sulfate in wine by Ion Chromatography. This method was set up as required by the Overseas Market Access Requirements (OMAR)-Brazil. This states the requirements that various wine types must not exceed

One way Sulfate may be introduced to wine is by a process known as 'plastering'; where a crude product derived from gypsum is introduced to crushed grapes (must). This process has the effect of reducing the pH (which helps prevent spoilage (lactic bacteria) and to facilitate filtration.

During the process of wine making, sulfite is often added for its antioxidant and antimicrobial properties. Although sulfate is a stable species, the oxidation of sulfite causes erroneously high sulfate results. For this reason samples must be either measured immediately or stabilised. Samples should be sent to the Blenheim site for stabilisation. Samples must be tested within 5 days or a new bottle will need to be requested.

Sulfur in Wine and Juice (Hamilton Trace Elements Testing-S_BO)

This method is used for the analysis for trace element and mineral testing. Sulfur solubilised from the sample by digesting with nitric/hydrochloric acid mixture in a capped polypropylene tube and filtered, this is then run through the Agriculture Divisions Inductively coupled Plasma-optical Emission Spectroscopy (ICP-OES).