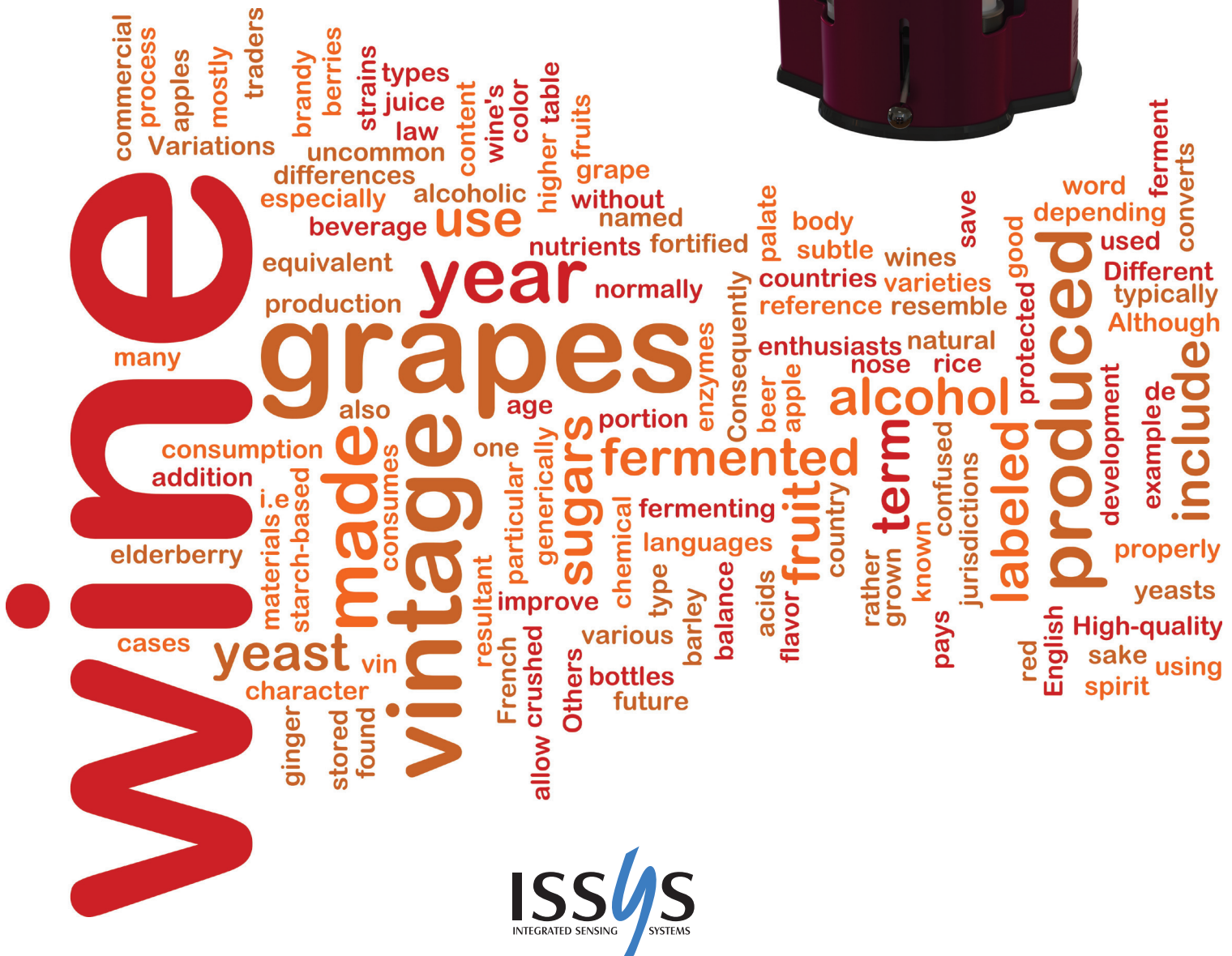


Advancing alcohol, Brix, specific gravity measurements to a new level of performance, size and value!



MicroCoriolis™ Liquid Density Measurement Technology

The heart of WineSense™ is an innovative, liquid density measurement technology based on Integrated Sensing Systems' (ISSYS) patented* microCoriolis™ sensor. The components of a traditional vibrating glass tube density meter have been miniaturized using silicon micromachining technology. The result is a small sensor that can do big things. An integrated platinum RTD temperature sensor is closely coupled to the silicon micro tube density sensor. This close-coupled temperature sensor means increased measurement flexibility. The combination of density and temperature measurement, sophisticated electronics and software, result in a powerful system that can convert these measurements into data useful in wine production. These capabilities are incorporated into an integrated meter package that is simple in operation, but robust in design. The following liquid properties, required for advanced wine production, can be measured using a WineSense. This increases WineSense year-around productivity.

Alcohol Concentration Measurement

The measurement of ethanol concentration is a requirement for manufacturers of wine, cider and related fermented beverages. Accurate knowledge of ethanol content is important for production monitoring, quality control, blending, taxing and labeling. The precise ethanol determination (%v/v or %wt./wt.) of wine, sparkling wine, cider, rice wine, alcopops and fermenting must for production adjustment is accomplished using the gold standard for ethanol measurement, distillation. A novel, patent pending, micro-distillation system was developed to simplify and speed up the process for isolating ethanol from the beverage. The total volume of sample processed is around 10 mls. Processing time for the complete analysis is around 10 minutes. All measurements are weight based using a precision digitally connected scale. Software guides the operator through every step of the process. The distillate is injected into the integrated MicroCoriolis density meter, where the liquid density and temperature are measured and used to calculate ethanol concentration in vol% or wt%.



Brix, SG, Viscosity and Total Sugar Measurements

The density of grape must is an indication of its sugar content. WineSense accurately measures must liquid density and temperature. Integral software converts these two measurements into an accurate measurement of Brix. The density of the residue liquid remaining in the sample cup is measured after distillation to calculate the residual sugar/solids. WineSense can also act as a laboratory density meter to measure the concentration of SO₂ (6%) for sulfur addition, the specific gravity of the wine for the bottle filling volume calculation and truck loading. Finally, wine viscosity can be measured to provide a new insight into the wine production process.

WineSense Alcohol Meter Specifications (Preliminary)

Measurement	Specification
Density	0.6 to 1.3 grams/cc
Density Accuracy	0.0005 grams/cc
Temperature	5-70C
Temperature Accuracy	+/- 0.3C
Alcohol Range	0-100% vol or wt
Alcohol Accuracy	0.05% vol or wt
Alcohol Repeatability	0.02% vol or wt
Viscosity Range	0-50 cP
Brix Measurement Range	0-50 (- BRIX available)
Size	12"x 15.5" x 7.3"
Weight	17.5 lbs
Power	120vac 50/60 Hz
Power Consumption	300 watts

Distilled Spirits Alcohol Concentration

The ethanol content of distilled spirits, such as whiskey or vodka, can be measured using the built-in density meter. Density and temperature are measured and the alcohol content is determined using international standard tables programmed into the device.

* US Patents 6,477,901, 6,499,354, 6,637,257, 6,647,778, 6,923,625, 6,932,114, 6,935,010, 7,059,176, 7,228,735, 7,263,882, 7,351,603, 7,381,628, 7,437,912, 7,568,399, 7,581,429, 7,628,082, 7,789,949, 7,823,445, 7,921,737B2, 8,016,798, 8,021,961 Japanese Patent 4,568,763 and more domestic and international pending patents.



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