

## VINOQUANT 3

Art.-No. K 1165-1

### Measuring System

- **For the Easy and Accurate Determination of the *Alcoholic Strength* (Ethanol) in Wine, Must, Liqueur and Sparkling Wine as well as the**
- **Determination of the Extract in Wine**  
**Based on Distillation**

#### **Function (Principle):**

The volumetric flask (100 ml) is filled with 100 ml of wine, liqueur etc. (thick-flowing liqueurs and mashes have to be diluted). This sample is poured into the distillation flask, which is put on our heating plate, a kitchen stove or similar and weighted down with a lead ring. Then the condenser is attached, the supply tube for the cooling water is connected and the discharge tube is placed in the sink or similar. The empty volumetric flask (100 ml) is placed below the condenser discharge. Now the power is turned on and the water tap is opened. When our heating plate is used, the distillation starts after approx. 2.5 minutes.

After approx. another 12 minutes, ca.  $\frac{3}{4}$  of the volumetric flask will be filled and the heating is turned off. The remaining extract does not contain any alcohol anymore. The distillate is now filled up with water until 100 ml and then decanted into the special measuring cylinder. The alcohol content of the liquid in the cylinder is then determined by means of a Euro Class III alcoholometer (according to DIN 12803 = graduation in steps of 5,  $\varnothing$  23 mm). To obtain accurate measuring results, the user must make sure that the original sample liquid, the distillate obtained from that sample and the distilled water (needed to fill up of the distillate) have all more or less the same temperature (not necessarily 20 °C). If time is not important to the user, it is sufficient to store the mentioned liquids at room temperature. However, if the liquids are not at 20 °C, the measuring result has to be corrected with our temperature-correction nomogram or an official alcohol table or similar.

A considerably quicker, safer and more convenient analysis can be achieved if you use the *especially recommended parts and components* or at least our heating plate K 1199 (cf. end of this brochure).



#### **Advantages:**

- **No use of hazardous (carcinogenic) chromium reagent, no pollution of the environment, no threat to human health**
- **Easy operation, no skilled experts are required**
- **Very short distillation time (approx. 12 minutes) because of the enlarged base of the distillation flask (increased heat transfer)**
- **Only a few minutes working time, because no supervision is needed for distillation**
- **Very high accuracy in the range of  $\pm 0.1$  % vol.**
- **No stand that is complicated to operate. The enlarged base of the distillation flask and the applied lead ring result in a proper position of the distillation apparatus**
- **The distillation can be carried out on a kitchen stove**
- **No need to wait for laboratory analyses**
- **No expenses for external laboratory analyses**
- **Single precision-ground joint to ensure that the glass components of the distillation apparatus perfectly fit together. This prevents the components from being "glued" together and ensures that there will be no imperceptible loss of alcohol during the process of distillation.**

## BASIC CONFIGURATION

## List of Parts and Components

### Art. No.: K 1165-1

- Glass distillation apparatus (very space-saving design, stand-alone capacity = no need for complicated holding fixtures, simple installation: components must only be put together; single ground joint (any loss of alcohol is highly unlikely), consisting of:
  - K1165-2 • Distillation flask, Ø 12 cm
  - K1165-3 • Condenser
  - K1190 • Sealing grease (tube)  
to be distributed on the precision-ground joint in an extremely thin film (for sealing and to prevent the distillation flask from baking on)
  - K1192 • Boiling stones (glass)  
3 of those (reusable) stones must be put into the distillation flask.
  - K1185 • Plastic sample container (250ml)
  - K1183 • Volumetric flask (100ml) with stopper  
serves as a container for distillates. The stopper is put in to obtain a homogenous mixture of distillate and distilled water.
  - K1177 • Stand glass with plastic base and ring  
for sample analysis with a Euro Class III alcoholometer, with reducing adapter and O-ring, also suitable for use in our cardanic stand (cf. "Options")
  - K1191 • Defoaming agent (bottle)  
3 to 4 drops must be added to each sample to be analyzed
  - K1360 • Plastic pipettes (5ml),  
2 pipettes, needed for precision dosing of sample liquids and distilled water, respectively
  - L1005 • Sampling spoon
  - K1193 • Washing bottle (250 ml) for distilled water
  - K1171 • Tube (silicone, 6 x 1.5 mm, transparent), 2 m for water supply to distillation unit, with ¾" connection piece for tap, 2 m for discharge, very flexible, heat-resistant up to 200°C.
  - K1196 • Lead ring for the stabilization of the glass distillation apparatus
  - K1168 • Instruction manual
  - K1165-1 • **Basis configuration complete**

In order to be able to start work immediately, the user may possibly have to order additional parts and/or components (cf. "Options"), e.g. a suitable alcoholometer or temperature-correction device.

## OPTIONS

Additional parts and components for a quicker and more convenient performance of analyses and/or specifically required for analyses of liqueur, wine, mash and/or for the determination of extract in wine.

### Additional parts and components needed for the analysis of liqueurs:

To eliminate the risk of thick-flowing liqueur (egg liqueur and similar) being burned in the process of distillation, two parts of water must be added to each liqueur sample to be analyzed. In consequence, the alcoholometers to be selected for such analyses must show correspondingly "lower" readings, and any readings obtained must be multiplied by 3. Thin liqueurs do not have to be diluted (an alcoholometer according to the estimated alcohol content will be used).

Required measuring range of the alcoholometer to be used

(Euro Class III), calibratable, graduation 0.1 % vol

|         |             |
|---------|-------------|
| A300400 | 15-20 % vol |
| A300500 | 20-25 % vol |
| A300600 | 25-30 % vol |

- K1167 • Anti-bake-on agent (bottle)  
prevents the baking-on of samples in the distillation flask, absolutely indispensable with any distillation of thick-flowing liqueurs
- K1362 • Volumetric pipette, 50 ml, glass for dilution

### Additional parts and components needed for the analysis of mash:

- L1011 • Measuring vessel (100 ml, plastic)

Additional parts and components needed for the analysis of wine:

- K1166 • Calcium hydroxide (bottle)  
required for the distillation of wines and sparkling wines
- A300210 • Alcoholometer with thermometer, calibratable  
8.5-14.5 % vol, graduation: 0.1 % vol, also available as gauged instrument with official gauging certificate
- A300200 • as above, measuring range: 5.0-10.0 % vol.
- K3501 • Temperature-correction nomogram for alcoholometers with reading square, measuring range 0-30 % vol, laminated, very durable
- K1183b • Volumetric flask (200 ml) with stopper  
serves as a container for distillates to be officially analyzed. The stopper is put in to obtain a homogenous mixture of distillate and distilled water

Additional parts and components needed for the determination of extract in wine according to Tabarié:

- A401700 • Densimeter with thermometer, range: 0.98-1.00, graduation: 0.0002 g/ml, Ø 23 mm
- A401800 • as above, measuring range: 1.00-1.02 g/ml
- A401900 • as above, measuring range: 1.02-1.04 g/ml
- A402000 • as above, measuring range: 1.04-1.06 g/ml
- A402100 • as above, measuring range: 1.06-1.08 g/ml
- A402200 • Densimeter without thermometer, range finder densimeter for A401700-402000, measuring range: 0.98-1.08 g/ml, graduation: 0.0005 g/ml, Ø 23 mm  
All of the above densimeters are also available as gauged instrument with official gauging certificate
- K3502 • Temperature-correction nomogram for densimeters, with reading square, measuring range: 0.99-1.11 g/ml, laminated, very durable, easy operation
- K3503 • Nomogram: density ratios of mixtures of alcohol and water, with reading square and extract table, laminated, very durable
- K3504 • Wine data sheet,  
for an easier calculation and archiving of extract, laminated, very durable

Other optional parts and components:

- K1170 • Natural thermostat  
Tub and overflow vessel, with 2 m discharge tube = perfect solution for all temperature-related problems. First, the natural thermostat is filled with water. Next, the liquid sample to be analyzed, the distillate obtained from that sample and the distilled water that is needed to fill up the distillate are placed into the natural thermostat which will then quickly balance the temperatures of the liquid sample, the distillate and the distilled water - which is the most important prerequisite for accurate measuring results.
- K1196 • Lead ring for use in the natural thermostat  
to prevent containers for liquid samples, distillates and distilled water that are placed into the water contained within the natural thermostat from falling over
- A300100 • Alcoholometer with thermometer, calibratable  
Euro Class III, measuring range: 0-5 % vol, graduation: 0.1 % vol, Ø 23 mm
- A300200 as above, measuring range: 5-10 % vol
- A300300 as above, measuring range: 10-15 % vol
- A300400 as above, measuring range: 15-20 % vol
- A300500 as above, measuring range: 20-25 % vol
- A300600 as above, measuring range: 25-30 % vol  
All of the above devices are also available as gauged instruments with official gauging certificates. Other measuring ranges available on request.
- K1197 • Timer with alarm  
fits easily into any pocket, can be used to give a warning signal at the end of a distillation cycle (all cycles are more or less of the same length)
- K1185 • Plastic sample bottle (250 ml)

- L2000 • Cardanic stand with many advantages. The special glass cylinder that is part of the basic configuration and Art. No. K1177 (please see basic configuration) can be hooked into the cardanic stand. This measure eliminates practically all of the difficulties normally encountered in densimeter measurement (e.g. if the glass cylinder hangs vertically, densimeter will sink very slowly into the sample liquid, without any rotation).
- L2004 • Reducing adapter and O-ring needed for the insertion of the special glass cylinder into the cardanic stand.
- L2006 • Magnifying glass for use on the cardanic stand with powerful magnifying lens, considerably facilitates the reading of densimeter scales, can be attached to the cardanic stand by means of clip fastener, i.e. with one quick grip.



- K1199 • Heating plate, electric (230 V, 600 W), round, Ø 14 cm, optimal for distillation flask, therefore distillation time approx. 12-13 minutes
- K1403 • Floating thermometer for the measurement of the temperature of the water within the natural thermostat
- K3501 • Temperature-correction nomogram for alcoholometers measuring range: 0-30 % vol, laminated, very durable, easy operation
- K3500 • Temperature-correction nomogram for alcoholometers measuring range: 26-56.5 % vol, laminated, very durable, easy operation
- K3600 • Temperature-correction nomogram for alcoholometers measuring range: 54-84 % vol, laminated, very durable, easy operation
- K1194 • Extension tube (silicone, 6 x 1.5 mm, transparent), 1 m.
- K1195 • Tube coupling for the extension of K1194.
- K1502 • Storage rack for densimeters, solid grey PVC, waterproof design; permits to store densimeters in an upright, readily available position near the laboratory workplace or in the water of the natural thermostat (in that case the devices will always have the required temperature, so that it is ensured that temperature-related errors will be avoided), 10 places, for densimeters up to Ø 23 mm.
- K1505 • Storage rack for glass cylinders, solid grey PVC, waterproof design; permits to store glass cylinders to be used in the cardanic in an upright, readily available position, can also be placed in the water of the natural thermostat (in that case the cylinders will always have the required temperature, so that it is ensured that temperature-related errors will be avoided), 6 places for K1177.

**The following configuration is especially recommended to achieve a very quick and convenient performance with extremely accurate measuring results:**

Basic configuration + natural thermostat + heating plate + 2 lead rings + cardanic stand + magnifying glass + reducing adapter (an, if required for the particular application: alcoholometer + temperature-correction nomogram for densimeters).