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Getränkeanalytik

Determination of volatile acid according to the semimicro method

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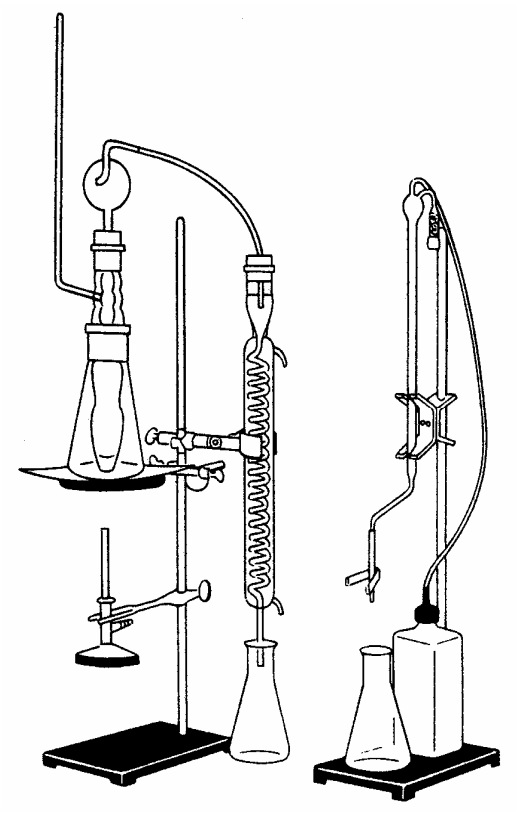
Technical information and instructions for use



Working equipment for the determination of volatile acid according to the semimicro method:

- Natural-gas burner alternatively propane-gas burner with tool holder
- Ring 130 mm ∅ with sleeve and ceramic wire netting 160 x 160 mm
- Stand with aluminium rod 600 x 12 mm
- Erlenmeyer flask 500 ml NS 45 with hook and 2 retaining springs
- Insert with NS 45 and NS 29, hook and ascending pipe for volatile acid semimicro method
- Distillation attachment with 250-mm silicone hose 8 x 2 mm and silicone plug 32/26 x 30 mm on both sides (free hose end to cooler approx. 35 mm)
- Coiled cooling pipe NS 29
- Round clamp with sleeve, 40 mm span, for cooler
- 2.5 m rubber hose 8 x 2 mm with transition piece 10 x 14 mm and 100 mm hose 12 x 2 mm
- Volumetric pipette 5 ml
- Erlenmeyer flask 200 ml, narrow-necked
- Stand with aluminium rod 600 x 12 mm
- Burette holder 10 / 12
- Automatikus burette 10 ml TTS
- 1 pack of pumice stones
- 1 spoon for pumice stones
- 1 bottle of silicone antifoam solution

Required reagents (not included in the price):

- 250 ml 1/100 n caustic soda lye
- 100 ml 1/10 n caustic soda lye
- 50 ml indicator solution in dropping bottle

Analysis instructions:

- 5.0 ml of the sample to be examined, from which carbon dioxide has at first been removed by means of water jet vacuum, is pipetted into the pear-shaped distillation flask, adding one drop of silicone antifoam solution. The water level in the outer flask, which serves as a water steam generator, must in the pear-shaped flask always be above the level of the liquid to be examined.
- After having added some pumice stones into the water steam generator to avoid retardation of boiling, the equipment is assembled, whereby it has to be made sure that the connections are tight. 60 ml are distilled over into the receiver by means of a powerful water steam jet.
- The distillate is heated until it starts boiling and titrated after cooling down and adding 3 - 4 drops of phenolphthalein until a pink coloration is achieved with 1/100 n of caustic soda lye. The transition is easily visible against a white background.
- The multiplication of the lye consumption in ml with the factor 0.12 results in the volatile acid in g/l

Example:
3.5 ml of 1/100 n lye has been consumed during the titration. The content of volatile acid amounts to:

3,5 x 0,12 = 0,42 g/l

Important note:

1/100 n caustic soda lye is not stable enough for storage. It should be prepared in 2-weeks intervals from 1/10 n caustic soda lye. To do so, pipette 10.0 ml of 1/10 n caustic soda lye into a 100 ml volumetric flask, add distilled water exactly up to the ring mark and mix preparation thoroughly. Then fill the supply bottle for 1/100 n. Note production date on the supply bottle.

General remarks for the determination of volatile acid:

Contrary to the fruit acid contained in beverages, the volatile acid is, as its name indicates, volatile with water steam. For its determination, the beverage is therefore subjected to water steam distillation, and the acids gained in the distillate, mainly acetic acid apart from minor quantities of formic acid and propionic acid, are titrated by means of lye.

In beverages with high SO_2 contents, the values achieved from the determination of the volatile acid are too high. For this reason, always determine the SO_2 contents in the respective beverage when achieving high values of volatile acid.

To be on the safe side, beverages having a value of volatile acid within the fringe range, should be subjected to a determination of the true volatile acid as follows:

True volatile acid [g/l] = Titration value [g/l] – (0,001 x total SO_2 [mg/l])