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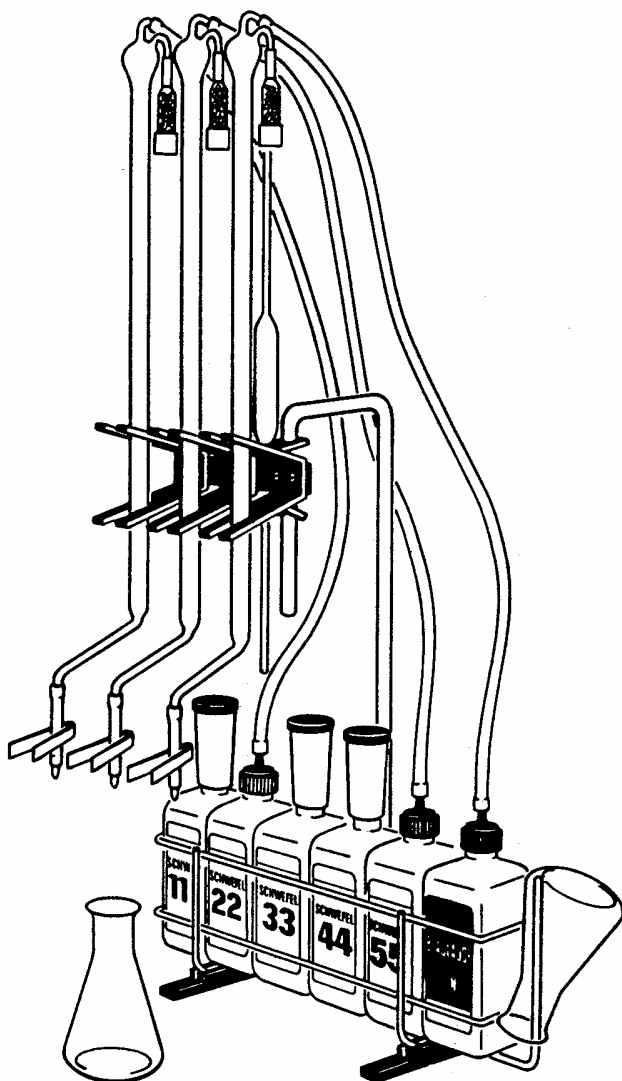
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Getränkeanalytik

TITROFIX-equipment according to Dr. Rebelein for titration of total SO₂, free SO₂ and total acid in white wines

version 10/2005

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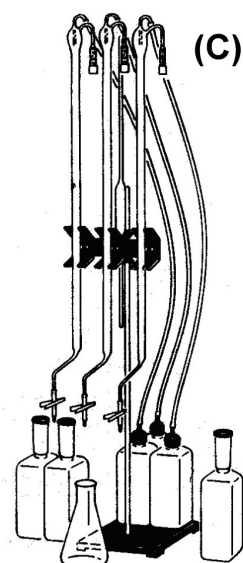
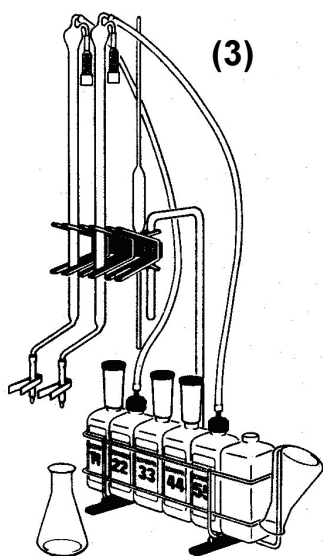
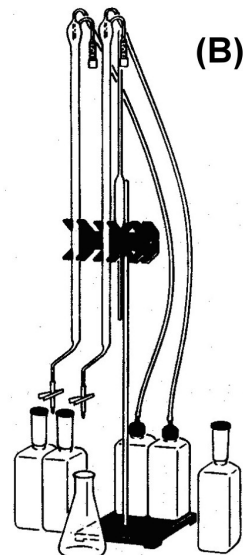
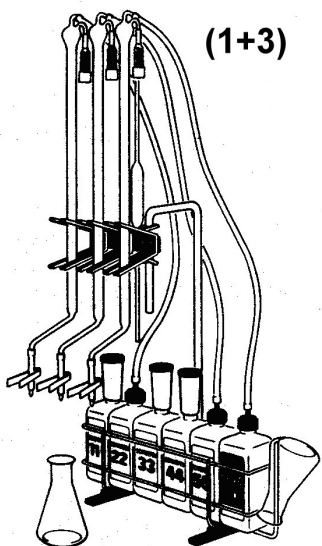
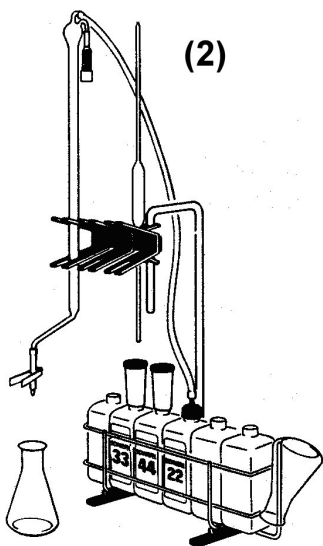
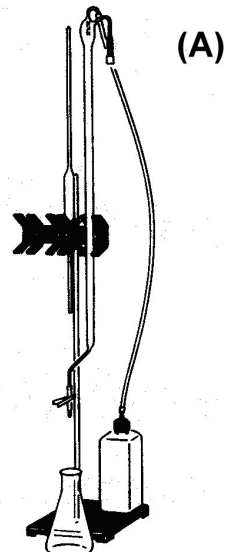
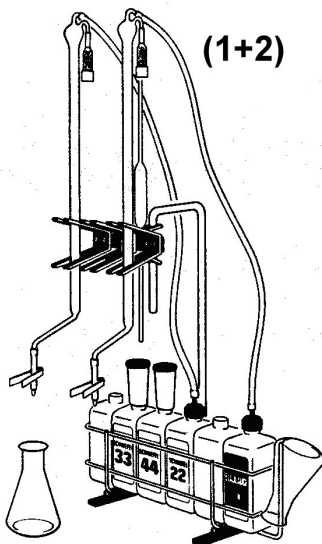
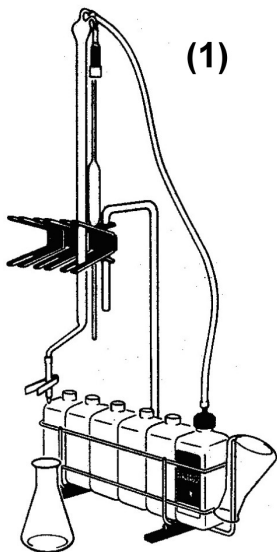


- The measurement result is available during only 3 minutes.
- The clear change of colour indicates the final point of titration.
- Suitable for pale red wines, too (e.g. Trollinger).
- Assistance, accuracy of measurement and time saving by automatic burettes and dose cylinders.
- Clever conception for addition of all solutions, quick reaction kinetics.
- Quick checking of the solutions' condition by blank value titration.
- Available for stationary or portable use.

portable

TITROFIX

stationary



Titration equipment TITROFIX for total acid, free SO₂ and total SO₂

- **Portable TITROFIX-set:**

TITROFIX (1)	for total acidity (TA)
TITROFIX (2)	for free SO ₂
TITROFIX (1+2)	for TA and free SO ₂
TITROFIX (3)	for free SO ₂ and total SO ₂
TITROFIX (1+3)	for TA, free SO ₂ und total SO ₂

- **Stationary TITROFIX-set:**

TITROFIX (A)	for total acidity (TA)
TITROFIX (B)	for free SO ₂ and total SO ₂
TITROFIX (C)	for TA, free SO ₂ und total SO ₂

Every **TITROFIX-equipment** is prepared with the triple holder for burettes for the completion of the individual method.

Working equipment:

Portable: TITROFIX-pannier 6/500 ml with stand-staff 8 mm, holder for burettes 12-12-12/8 mm

Stationary: standplate with staff 600x12 mm, holder for burettes 12-12-12/12 mm

accessoires (• included in equipment price):	TITROFIX-equipment							
	(1)	(2)	(1+2)	(3)	(1+3)	(A)	(B)	(C)
blowing out-pipette 25 ml	•	•	•	•	•	•	•	•
2 conical flasks 200 ml	•	•	•	•	•	•	•	•
burette 25 ml for 1/3 soda lye	•		•		•	•		•
burette „total sulfur according to Dr. Rebelein“ with additional scale 0-100 mg/l free SO ₂ /0-25 nl for titration with „sulfur 22“		•	•	•	•		•	•
burette „SO ₂ -titration according to Rebelein“ 0-500 mg/l total SO ₂ for „sulfur 55“				•	•		•	•
dose cylinder 10 ml for „sulfur 11“				•	•		•	•
dose cylinder 10 ml for „sulfur 33“		•	•	•	•		•	•
dose cylinder 10 ml for „sulfur 44“		•	•	•	•		•	•
analyses-instructions	•	•	•	•	•	•	•	•

benötigte Reagenzien (nicht im Preis inbegriffen):	TITROFIX-Gerät							
	(1)	(2)	(1+2)	(3)	(1+3)	(A)	(B)	(C)
500 ml 1/3 n soda lye in poly-bottle	•		•		•	•		•
500 ml „sulfur 11“ in poly-bottle				•	•		•	•
500 ml „sulfur 22“ in poly-bottle		•	•	•	•		•	•
500 ml „sulfur 33“ in poly-bottle		•	•	•	•		•	•
500 ml „sulfur 44“ in poly-bottle		•	•	•	•		•	•
500 ml „sulfur 55“ in poly-bottle				•	•		•	•

For titration of Reductones/ Ascorbic Acid additional needed (not included in basic equipment price):

- 100 ml neutral glyoxal solution 40%ig
- full-pipette 2 ml

Using Instructions

Preparation of Samples:

Before the SO₂ titration the carbonic acid must not be removed from the liquid to be analysed by shaking or filtering, as in this case SO₂ would be lost as well. If the liquid is not fit for pipetting measure exactly 25 ml with measuring cylinder.

Titration of Total SO₂:

- pour 10 ml „sulfur 11“ into conical flasks;
- add with pipette 25 ml of wine with the tip of pipette just about touching the surface of the solution. Blow out the pipette approx. 10 - 15 seconds after the pipette has emptied and wipe remaining drop off the tip;
- add 25,0 ml „sulfur 22“;
- while shaking the flask add 10 ml of "sulfur 33" **in one gush**, and **immediately after a blue colour appears** add 10 ml of "sulfur 44", again **in one gush**;
- titrate with "sulfur 55" using the **burette "0-500mg/l"** until the original colour of the wine re-appears;
- the burette reading indicates the total SO₂ in mg/l (milligrams per litre).
- the upper limit which may be detected is 500 mg/l

Tip: Results for total SO₂ in the amount of legal limits, for safety reasons have to be checked with a distillation method, e.g. the SO₂ distillation according to Dr. Rebelein.

Method for saving costs by using less volumes of reagents

The approach is like mentioned above, with the following exception:

- halve quantity of solution „sulfur 22“ in 12,5 ml;
- correct burette reading by taking off 250mg/l (for example: burette reading 385 mg/l - 250 mg/l = 135 mg/l actual titration result).

Titration of Free SO₂:

- pipette 25 ml of the sample into conical flask with the tip of the pipette touching the wall of the flask close to its bottom, blow out pipette approx. 10 - 15 seconds after pipette has emptied and wipe remaining drop off the tip;
- add 10 ml each of „sulfur 33“ and „sulfur 44“;
- titrate with "sulfur 22" by using the **burette 25ml, additional scale "0-100mg free SO₂/l"** until a light blue colour persists;
- read on scale 0-100 mg/l the content of free SO₂ in mg/l.

Tip: Mind before titration, that the correct burette „SO₂-titration according to Rebelein“ with **additional scale 0-100 mg/l free SO₂/ 0-25 ml** for titration with „sulfur 22“ is used.

Titration of Reductones/ Ascorbic Acid:

The previous instructions do not take into consideration reductones and ascorbic acid. For the determination of "genuine SO₂" a sample is titrated as stated and a second sample as follows:

- pipette 25 ml of wine into 200 ml conical flask;
- add 2 ml of glyoxal solution;
- after exactly 5 minutes add 10 ml each of "sulfur 33" and "sulfur 44";
- titrate with "sulfur 22" by using the **burette 25ml, additional scale "0-100mg free SO₂/l"** until a pale blue colour persists;
- read on scale 0-100 mg/l the content of reductones and ascorbic acid expressed as free SO₂ in mg/l.

The figure of the second determination (reductones/ascorbic acid, stated in mg SO₂) is deducted from the figure of the first determination. The difference is the actual content of the wine of sulfurous acid (genuine SO₂). For expressing reductones as ascorbic acid the result of free SO₂ is multiplied by 2,75!

Titration of Solutions (Control of reagents):

- pour 25 ml of "sulfur 22" into 200 ml conical flask;
- add 10 ml each of "sulfur 33" and "sulfur 44";
- titrate with "sulfur 55" using the **burette "0-500mg/l"** until blue colour disappears;
- the solutions are satisfactory if the deviation from 0 mg/l is not more than +/- 6 mg/l.

Titration of Total Acid with 1/3 n Soda Lye with Blue Indicator ("Blaulauge"):

- Beverages containing carbonic acid are to be freed of this before the determination by vigorously shaking a partly filled bottle or by a short heating up;
- pipette 25 ml of the beverage into the 200ml-conical flask;
- titrate with 1/3 n soda lye with indicator (Blaulauge) until the colour changes from green to blue;
- the burette reading indicates the total acidity in g/l, expressed as tartaric acid.

Tip: The proximity of the neutral point is recognized by change of colour from yellow to green. The neutral point is reached at the moment of the change from green to blue. The burette scale indicates the total acidity in g/l.