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Getränkeanalytik

Schliessmann CYANIDE test

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- Rapid test with 100 test-sticks for the determination of free hydrogen cyanide (HCN) in freshly distilled spirits from stone-fruits and for the determination of total cyanides (CN^-) in stored or bought distillates and potable spirits -

General information:

Knowing the content of cyanides in distillates is the precondition to decrease its concentration, to avoid the subsequent formation of ethylcarbamate (EC) by appropriate measures (**CYANUREX®**-procedure, cleaning of the copper-catalyst) and to check their effectiveness.
The **Schliessmann CYANIDE test** is a simple rapid test method.
It doesn't require any further apparatus for the determination of cyanide in distillates and spirits within several minutes.
Only the examination of mashes requires a previous distillation of a sample.
The **Schliessmann CYANIDE test** is a new version of the **Quantofix-Tests Cyanide** already used since years in many distilleries.
While this original test gave reliable results only for fresh distillates, the new test enables to test stored distillates or potable spirits.

Using possibilities:

- *Rapid estimation of free hydrogen cyanide in fresh distillates from stone-fruits (sample-, first- and second-distillates)*

⇒ *Estimation of the risk of the formation of EC*

- *Rapid test for the success of the CYANUREX® - procedure*

⇒ *Estimation of the necessary dosage of CYANUREX®*

- *Rapid check of the function of copper-catalysts*

⇒ *Cleaning of ineffective catalysts*

- ***New:*** *Rapid estimation of total cyanides in stored distillates and potable spirits*

⇒ *Decision on necessary measures of correction*

Scope of supply:

100 test-sticks, color-scale, measuring vessel, 3 reagents, detailed instruction

Analytical range:

0,5 to 30 mg cyanide per liter

Background:

Hydrogen cyanide and its salts (cyanides) change with the time into ethylcarbamate (EC). This reaction is initiated under the influence of light and followed by a chain reaction taking place also in the darkness. The reaction stops as soon as the conversion will be complete.
Distillates from stone-fruits with a content of cyanide of more than 1 mg/l potable spirit bear the risk that the content of EC will rise above 0,8 mg/l potable spirit, so that the product may not be sold.
Taking into regard the carcinogenic characteristic of EC, its concentration has to be decreased as much as possible.
A storage in the darkness cannot completely serve this purpose. It is much more reliable to control the content of the precursing cyanides during mashing and distillation.

Important !!!

Ethylcarbamate (EC) already present cannot be determined with the **Schliessmann CYANIDE test**.
If during distillation a sufficient volume of tails was taken away, (switch from heart to tails at about 55%vol), the existence of EC in the heart of fresh distillates will be unlikely.
In the opposite stored or bought distillates with unknown origin perhaps just containing EC have to be examined in an appropriate laboratory for EC **or** they have to be distilled again in principal.
For this purpose the distillate has to be blent with water to 30-35% vol. If subsequent distillation will take place on a still with condensing installations and under careful separation of heads and tails, (switch from heart to tails at about 55-50%vol), the existence of EC in the heart will be unlikely.

Instructions for the work with first and second distillation and with CYANUREX®:

It is recommended to test already the first distillates with the **Schliessmann CYANIDE test**. If there are tails processed together for the second distillation, their content of cyanides has to be tested, too, to be taken into account for the dosage of CYANUREX® and to take away a sufficient volume of tails during the second distillation.

- If the first distillate contains less than 1 mg of cyanide/l, the second distillate will be free of it.
- If the first distillate contains between 1 and 3 mg/l, the second distillation should be achieved under addition of 3-5 g CYANUREX® per 100 liters of first distillate.
- If the first distillate contains 10 mg/l or more, the second distillation should be achieved under addition of 15-20 g CYANUREX® per 100 liters of first distillate.

Using instructions:

Preparation of the sample:

Dilute the sample of distillate for determination with water to less than **50% vol**.
Example:
Dilution of a distillate with water 1:1 means a dilution-factor of 2.

Determination of the free cyanids of fresh distillates (sample-, first- and second-distillates):

- Pour the prepared sample into the clean, dry measuring-vessel until the mark
- take a test-stick from the aluminium-can, lock the can immediately firmly, don't touch the test-field with your fingers
- add 5 drops of reagent **CYANID-1** to the sample and mix by careful shaking
- immediately dip the test-stick for 45 seconds into the liquid an stir shortly, then remove it and compare the colour of the test-field within 10 seconds with the color-scale printed on the aluminium-can against a white background
- concentrations between 0,5 and 1 mg cyanide per liter show only one very weak pink-colouring on the stick, therefore it has to be checked with light illumination
- multiply the value with dilution-factor to get the concentration of the undiluted sample
- rinse the measuring-vessel with water and dry it

Determination of the total cyanids of distillates, that are older than 24 hours or bought, and in spirits:

- Pour the prepared sample or spirit (less than 50%vol) into the clean, dry measuring-vessel until the mark
- add 2 drops of reagent **CYANID-2** and mix carefully (**Caution!** Reagent **CYANID-2** is corrosive (caustic lye), immediately rinse droplets on the skin with water!)
- wait for 5 minutes
- add 3 drops of reagent **CYANID-3** and mix again carefully
- take a test-stick from the aluminium-can, lock the can immediately firmly, don't touch the test-field with your fingers
- add 5 drops of reagent **CYANID-1** to the sample and mix by careful shaking
- immediately dip the test-stick for 45 seconds into the liquid an stir shortly, then remove it and compare the colour of the test-field within 10 seconds with the color-scale printed on the aluminium-can against a white background
- multiply the value with dilution-factor to get the concentration of the undiluted sample
- rinse the measuring-vessel with water and dry it

Evaluation of the measuring-results and subsequent steps to do:

(for details about the cleaning of cyanide- and EC-incriminated distillates and mashes please see our **information-leaf "CYANUREX® - procedure to inhibit the formation of EC"**)

- **The test-field on the test-stick doesn't show any colouring**
  - The distillate doesn't contain any cyanide resp. the concentration is below 0,5 mg/l. Such distillate will form no or only low quantities of EC.

- **The test-stick shows a weaker violet-colouring than this of the color-value 1 mg/l**
  - The distillate contains less than 1 mg cyanide per liter. After blending on potable strength, a formation of EC of over 0,8 mg/l will be unlikely. Nevertheless, the distillate should be stored in the darkness.
  - Subsequent distillations of the same mash should be achieved with addition of some CYANUREX® (5-10 g/hl of mash) or with catalyst.
  - Provided it has already been worked with CYANUREX® as well as with catalyst, the dosage of CYANUREX® should be increased resp. the catalyst should be cleaned.

- **The test-stick shows a weak violet colouring in accordance with the color-value 1 mg/l**
  - The distillate already contains as much cyanide as is necessary for the formation of 0,8 mg EC per liter.
  - The distillate should be blent with distillates free of cyanides **or** it should be distilled again under addition of CYANUREX® (5 g/100liters of distillate) **or** with catalyst.
  - Subsequent distillations of the same mash should be achieved under addition of CYANUREX® (10 g/hl of mash) or with catalyst.
  - Provided it has already been worked with CYANUREX® as well as with catalyst, the dosage of CYANUREX® should be increased for about 3-5 g/hl of mash resp. the catalyst should be cleaned.

- **The test-stick shows color-value 3 mg/l**
  - The distillate contains such a high level of cyanide, that a formation of more than 0,8 mg EC/l is to expect.
  - The distillate should be blent with distillates free of cyanides **or** it should be distilled again under addition of CYANUREX® (10 g/100liters of distillate) **or** with catalyst.
  - Subsequent distillations of the same mash should be achieved under addition of CYANUREX® (15 g/hl of mash) or with catalyst.
  - Provided it has already been worked with CYANUREX® as well as with catalyst, the dosage of CYANUREX® should be increased for about 5-10g/hl of mash resp. the catalyst should be cleaned.

- **The test-stick shows color-value 10 mg/l**
  - The distillate has to be distilled again under addition of CYANUREX® (20g/100liters of distillate) **or** with catalyst.
  - Subsequent distillations of the same mash should be achieved under increased dosage of CYANUREX® for about 10-15 g/hl of mash.

- **The test-stick shows color-values more than 10 mg/l, up to 30 mg/l**
  - The distillate has to be distilled again under addition of CYANUREX® (40 to maximum 60 g/100liters of distillate) **or** with catalyst.