

Analytix *LabInfo*



HYDRANAL®-Water Standards



HYDRANAL-Water Standards for:

- Titer determination of volumetric Karl Fischer reagents
- Control of coulometric Karl Fischer instruments
- Suitability tests acc. to Ph.Eur. 5.7
- Quality control of Karl Fischer instruments acc. to ISO 9001-9003

Tested against NIST SRM 2890

Calibration, validation and control of analytical instruments and reagents are central requirements in regular Quality Management systems. In the case of Karl Fischer titrations, the most widely used method for water determination, a known amount of water is required. Pure water can be used, but the amounts needed (10 mg for volumetry, and 100 µg - 1 mg for coulometry) are difficult to weigh.

We recommend HYDRANAL-Water Standards with an exactly confirmed water content

- for titer determination
- for monitoring precision and accuracy
- for validation and inspection of KF titrators according to ISO 9001-9003, GMP, GLP and FDA guidelines

Traceability to a national standard or to a SI unit is often required in these guidelines. Three of our liquid HYDRANAL-Water Standards, one for volumetry and two for coulometry as well as one of our solid HYDRANAL standards are tested against the NIST standard reference material SRM 2890, Water Saturated Octanol. «NIST» stands for the National Institute of Standards and Technology of the USA.

Liquid HYDRANAL-Water Standards

HYDRANAL-Water Standards consist of a solvent mixture with specific composition and precisely determined water content. The exact amount of water is given on the Certificate of Analysis which is enclosed in each product package. HYDRANAL-Water Standards are filled under Argon in 4 mL or 8 mL glass ampoules. The humidity-proof packaging allows for a minimum storage of five years. Each box contains 10 ampoules.

Advantages of HYDRANAL-Water Standards

- Filled under Argon in glass ampoules
- One ampoule is sufficient for one test series
- Minimum shelf-life of five years
- Guidelines for use acc. to ISO 9001-9003 enclosed
- Certificate of Analysis enclosed in each box
- HYDRANAL-Water Standard 0.10, HYDRANAL-Water Standard 1.00 and HYDRANAL-Water Standard 10.0 are tested against NIST SRM 2890

General Instructions for use

Opening an ampoule directly before a measurement reduces the risk of atmospheric moisture entering the ampoule and falsifying results (depending on local humidity conditions). We recommend the use of glass syringes since most plastic syringes can store or release a certain amount of water over time. It is common practice to flush each syringe before use with approximately 1 mL of HYDRANAL-Water Standard, then draw the whole remaining volume into the syringe. This will reduce exposure of the standard to atmospheric moisture.



Picture 1 Liquid HYDRANAL-Water Standards

34849 HYDRANAL-Water Standard 10.0

Water content 10 mg/g
Standard for volumetric Karl Fischer titration. This standard is tested against NIST SRM 2890.

34828 HYDRANAL-Water Standard 1.00

Water content 1 mg/g
Standard for coulometric Karl Fischer titration. This standard is also tested against NIST SRM 2890.

Although coulometry is considered an absolute method, not all titrated values are necessarily correct. Air humidity, electrode poisoning, or sample matrix conditions can influence the results. It is therefore necessary to test the system with known water quantities and check the recovery data. This validation of the instrument should be performed once the titration vessel has been freshly charged with reagents. To monitor for interferences caused by the sample matrix, a control test should be done immediately after a sample was analyzed. In either case the theoretically added amount of water should correspond to the experimentally titrated amount of water; for an added amount of 1000 µg water, the deviation should not exceed 50 µg (better 30 µg).

34847 HYDRANAL-Water Standard 0.10

Water content 0.1 mg/g
Standard for coulometric Karl Fischer titration. This standard is also tested against NIST SRM 2890. It can be used in the same way for verification of coulometric measurements.

We recommend the use of this standard when determining very small absolute amounts of water (approx. 100 µg). An excellent working technique is required, otherwise the results may be too high. This also applies for the results of the sample measuring.

NEW 34694 Water Standard Oil

Mineral-oil based matrix standard for Karl Fischer titration in oils. The exact water content of each lot is given on the enclosed Certificate of Analysis. HYDRANAL-Water Standard Oil is tested against NIST SRM 2890.

34813 HYDRANAL-Standard 5.00

Standard for volumetric Karl Fischer titration with water content of 5.00 ± 0.02 mg/mL.

This liquid calibration standard contains a mixture of solvents of a defined partial pressure of water vapor and is therefore stable under normal atmospheric conditions.

34802 HYDRANAL-Water-in-methanol Standard 5.00

Standard for volumetric back titration according to Karl Fischer with water content of 5.00 ± 0.02 mg/mL.

This standardized methanol is hygroscopic and can take up atmospheric moisture.

All liquid HYDRANAL Standards should be dosed using syringes, weighed before and after dosage.

HYDRANAL Solid Standards

34696 HYDRANAL-Standard sodium tartrate dihydrate

Primary standard for volumetric Karl Fischer titration with water content of 15.66 ± 0.05 %. This standard is tested against NIST SRM 2890. HYDRANAL-Standard sodium tartrate dihydrate remains stable under normal conditions and does not lose or adsorb moisture. It is presented with a Certificate of Analysis in a finely powdered form that dissolves relatively quickly in methanol, although its solubility is limited.

34803 HYDRANAL-Standard sodium tartrate dihydrate

Primary standard for volumetric Karl Fischer titration with water content of 15.66 ± 0.05 %.

Table..... Fluka Standards for Karl Fischer titration

Cat. No.	Product	Description	Pack Size
34849	HYDRANAL-Water Standard 10.0	Standard for volumetric KF titration 1 g (= 1 mL at 20°C) contains 10.0 mg = 1.00 % water Contains 10 glass ampoules of 8 mL. Tested against NIST SRM 2890	80 mL
34828	HYDRANAL-Water Standard 1.00	Standard for coulometric KF titration 1 g (= 1 mL at 20°C) contains 1.00 mg = 0.10 % water Contains 10 glass ampoules of 4 mL. Tested against NIST SRM 2890	40 mL
34847	HYDRANAL-Water Standard 0.10	Standard for coulometric KF titration 1 g contains 0.10 mg = 0.01 % water Contains 10 glass ampoules of 4 mL. Tested against NIST SRM 2890	40 mL
34694	HYDRANAL-Water Standard Oil	Mineraloil-based standard with water content in low ppm-range (CoA) Contains 10 glass ampoules of 8 mL Tested against NIST SRM 2890	80 mL
34813	HYDRANAL-Standard 5.00	Standard for volumetric KF titration Water content: 5.00 ± 0.02 mg/mL at 20 °C	100 mL 500 mL
34802	HYDRANAL Water-in methanol-Standard 5.00	Standard for volumetric back titration according to Karl Fischer. Water content: 5.00 ± 0.02 mg/mL	1 L
34696	HYDRANAL-Standard-Sodium tartrate dihydrate	Primary standard for volumetric KF titration Water content: 15.66 ± 0.05 %. Tested against NIST SRM 2890	25 g
34803	HYDRANAL-Standard-Sodium tartrate dihydrate	Primary standard for volumetric KF titration Water content: 15.66 ± 0.05 %	100 g
34693	HYDRANAL-Water Standard KF-Oven 140-160°C	Solid standard for control of KF Ovens Water content ~5 %	10 g
34748	HYDRANAL-Water Standard KF-Oven 220-230°C	Solid standard for control of KF Ovens Water content: 5.55 ± 0.05 %	10 g
37943	Fastrate™ volumetric 10 mg tablets	Solid standard tablets for titer determination of volumetric reagents. Water content: 10.00 mg \pm 3 %	1 pack of 30 tablets

34748 HYDRANAL-Water Standard KF-Oven 220-230°C

Solid standard for the control of Karl Fischer ovens using coulometric and volumetric water determination. This standard contains 5.55 ± 0.05 % water. The exact water content of each lot is given on the enclosed Certificate of Analysis. This standard may be used to verify the results of a Karl Fischer oven system. If the experimentally titrated amount of water differs from the added amount of water, the function of the connected volumetric or coulometric Karl Fischer titrator should be checked using a liquid HYDRANAL-Water Standard.

NEW 34693-HYDRANAL Water Standard KF-Oven 140-160°C

Solid standard for the control of Karl Fischer ovens, with a water content of ~5 % (exact value on Certificate of Analysis).

NEW 37943 Fastrate™ volumetric 10 mg tablets*

We are exclusively distributing Fastrate™ volumetric 10 mg, a novel water standard in tablet form to support volumetric Karl Fischer titrations. The tablets are manufactured and packaged in single use, individually sealed foil pouches and are supplied with a Certificate of Analysis in each carton.

*Licensed from Facet Analytical Services and Technology, LLC.
U.S. Patents 7,049,146 and 7,122,376 and foreign equivalents apply.


Technical support

We'll be glad to provide you with support for the analysis of your samples. We can suggest a solution to your analytical problem and, if necessary, develop an individual analytical method for you. Our comprehensive application collection makes daily work easier for HYDRANAL users.

Just call us! We'll be pleased to answer any questions regarding sample analysis using the Karl Fischer method and on HYDRANAL reagents. Or visit us at sigma-aldrich.com/hydranal.



Picture 2 Solid Standards



Contact

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*Accelerating Customers'
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