

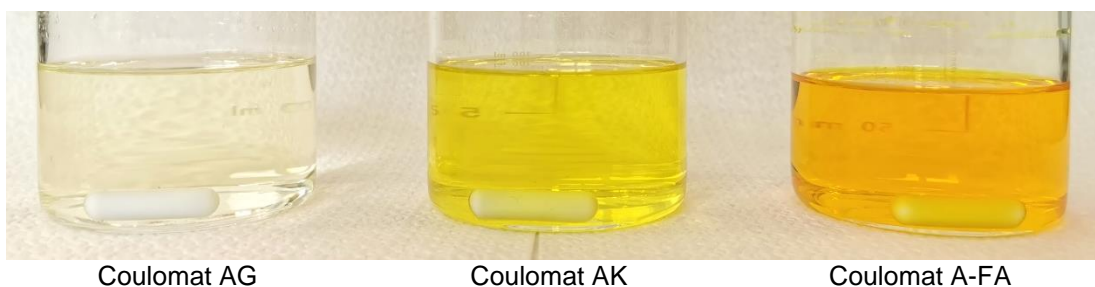
HYDRANAL™ Technical Information Sheet T013 Rev. 2

How to use Hydranal NEXTGEN Coulomat A-FA + C-FA reagents

1. Appearance of the reagent

Color

Alcohol containing KF reagents are generally colorless or yellow. In contrast to this alcohol-free Coulomat A-FA and C-FA have a yellow-orange to deep orange color.

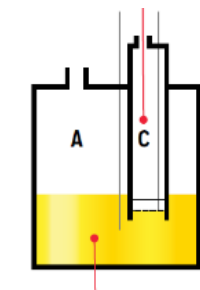


2. Filling the titration cell with diaphragm

Caution: FA reagents are very hygroscopic.

Fill and close the titration vessel and A-FA bottle as fast as possible to avoid water uptake.

Hydranal Coulomat C-FA



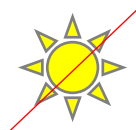
Hydranal Coulomat A-FA

1. Use a clear and dry titration vessel and generator electrode. Ideal conditions: Vessel and especially the generator electrode dried at 50°C overnight.
2. Before connecting the indication electrode to the vessel: Clean the platinum pins gently with a soft paper tissue.
3. Snap off top tag of the Coulomat C-FA ampoule at the predetermined breaking zone.
4. Transfer one ampoule of C-FA into the cathodic chamber (use a dry syringe or a funnel).
5. Fill the anode compartment with the anolyte Coulomat A-FA (use a dry funnel). The anolyte level should initially be a few millimeters higher than the catholyte level.
6. Before closing the titration vessel, dry contaminated glass parts with a paper tissue.
7. Start the conditioning mode and wait till drift is below 10 µg/min (ideally below 5 µg/min).
8. Speedup the conditioning phase:
After receiving a drift value < 20 µg/min “shake” gently the titration cell and “wash” the titration cell wall with the anolyte. Avoid reagent contact with upper glass parts and sleeve junctions!

Recommendation:

Keep the reagent away from sunlight or artificial sunlight lamps.

When reagent is used in a colorless titration cell, auto iodine production may take place. The titrator may over titrate and/or drift values may drop to zero. If sunlight cannot be avoided, cover the titration cell with aluminum foil. Alternatively, brown-glass titration vessels are available from many equipment suppliers.



Store the reagent bottle in dry conditions below 30°C

3. Can also a cell without diaphragm be used with FA reagents?

- Yes** For ketones Please consider that results will be increased by up to 10% if a cell without diaphragm is used
- No** For LiB electrolytes and oils Redox reactions can damage the cathodic platinum electrode (especially, if samples with highly reactive additives like FEC and VC are titrated)!

4. When should the anolyte and the catholyte be replaced?

1. At least once a week.
2. If recovery of Hydranal Water Standard 0.1 PC is higher than +/- 10%.
3. As soon as sample-related deposits are formed inside anode or cathode compartment. Solid deposits can damage the generator electrodes.
4. If the drift increases continuously above 20 µg/min.

5. Which water standards can be used?

For verification of the titration cell, alcohol-free water standards are recommended:

Art. No.	Water Standard	Description	Matrix	Comment
34446	HYDRANAL-Water Standard 0.1 PC	Liquid standard, water content 0.1 mg/g = 0.01%	Propylene Carbonate	Highly recommended
34426	HYDRANAL-CRM Water Standard 1.0	Liquid standard, water content 1.0 mg/g = 0.1%	Anisole	Do not use with borate samples

Note: Do not use water standards that contain alcohols

Even small amounts of alcohol destroy the alcohol-free system.

Strong side reactions with alcohol-sensitive samples will occur and incorrect titration results and/or high drift values will be obtained. For information on composition, please check the safety data sheet of each water standard used. Examples of non-compatible alcohols:

Methanol, ethanol, propanol, butanol, 1-methoxy-2-propanol / 1-Methoxypropan-2-ol

6. Handling of water standards

1. Shake the ampoule
2. Snap off the top tag of the ampoule at the predetermined breaking zone.
3. Rinse the needle and the plunger by taking approx. 0.5 mL standard into the syringe. Avoid taking any air into the syringe.
4. Discard rinsing solution and wipe the needle dry. Do not pull plunger up and down to avoid taking any air into the syringe.
5. Draw the rest of the standard immediately into the syringe. Leave a few drops in the ampoule.
6. Remove any possible air bubble from syringe and wipe the needle dry.
7. Add an aliquot of standard (at least 1 mL) by back-weighing to the titration vessel and carry out the titration.
8. Remove a few drops of standard from the tip of the syringe before further use and wipe the needle dry again.
9. Repeat steps 7-8.

7. Excess of iodine



water excess

neutral

iodine excess

Depending on the storage conditions, a reaction can be triggered, generating iodine production inside the original bottle. This can generate an excess of iodine in the reagent and cause the solution to become brown. If the titration cell is filled with such a darkened reagent, the titrator indicates an end-point parameter and is not able to start the conditioning mode. This can result in an error message indicating “over-titration” “check generator electrode” or “short circuit”.

If the A-FA reagent is brown (as opposed to the orange sample pictured above) an excess of iodine is present in the reagent. Excess of iodine does not have a negative impact on the product quality or render the reagent unusable.

An excess of iodine needs to be reduced by addition of water before use. Never use pure water directly! Use a water/co-solvent mixture as described below.

Add 1 mL of the mixture to the anodic compartment containing 100 mL Coulomat A-FA and start the the conditioning mode.

Preparation of water/co-solvent mixture:

Add 150 mg (0.15 mL) water to 50 mL of pure acetonitrile or liquid carbonate (PC, EC, EMC, DMC, etc.) and mix properly.

8. Further Information

Can be found on our website:

<https://lab.honeywell.com/en/hydranal/nextgen/fa-reagents>

Articles and Whitepapers:

- [Hydranal NEXTGEN FA for ketones Flyer](#)
- [Hydranal NEXTGEN FA for ketones Whitepaper](#)
- [Hydranal NEXTGEN FA for LiBs Flyer](#)
- [Hydranal NEXTGEN FA for LiBs Whitepaper](#)

Technical information sheets:

- Recommended handling of water standards:
See Hydranal-Technical Information Sheet T007
- FAQs – Hydranal NEXTGEN Coulomat A-FA / C-FA
See Hydranal-Technical Information Sheet T014

9. Products

Reagents and Water Standards:

34470 HYDRANAL-NEXTGEN Coulomat C-FA

34471 HYDRANAL-NEXTGEN Coulomat A-FA

34426 HYDRANAL-CRM Water Standard 1.0

34446 HYDRANAL-Water Standard 0.1 PC

Auxiliaries:

34881 Riedel-de Haën-Acetonitrile R CHROMASOLV™, ≥99.8% (GC)

34241 HYDRANAL-Molecular Sieve 0.3 nm

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