The Hach DR4900 Spectrophotometer & LCK Chemistry Tests

Smarter technology for reliable results

The Hach® DR4900 delivers best-in-class analytical performance and is the only spectrophotometer that actively alerts users to potential errors at critical steps before measurement, when used with Hach LCK Tests.

While performing tests in the lab with a spectrophotometer, errors that impact results can occur before the measurement takes place — from incorrect cuvette handling and insufficient sample preparation to external factors like temperature.

Feature	Problem It Solves	Key Benefit
10-Fold Measurement	Smudges, Scratches, Dust, or Cuvette defects affecting results	Accurate results regardless of cuvette condition or orientation
Temperature Warning	Temperature variation causing result inconsistency	Test-specific temperature thresholds warn only when temperature impacts the result
Temperature Compensation	Temperature variation causing result inconsistency	Automatically corrects results to calibration temperature (20°C)
Turbidity Alert	Invisible turbidity causing inaccurate readings	Dynamic, test-specific threshold warns only when turbidity actually impacts the result
Truecal™	Reduces deviations in results caused by variations in raw materials used in cuvette tests	More consistent measurements with different cuvette batches
Interference Check	Interfering substances skewing results without user awareness	Alert when interference risk is detected per parameter
Certificate of Analysis (CoA) Scan*	Provides access to documentation without needing internet	Seamless access to CoA at the instrument
Sample ID Text Recognition Scan*	Simplifies sample tracking and reduces data entry	Faster and easier uploading of sample ID information

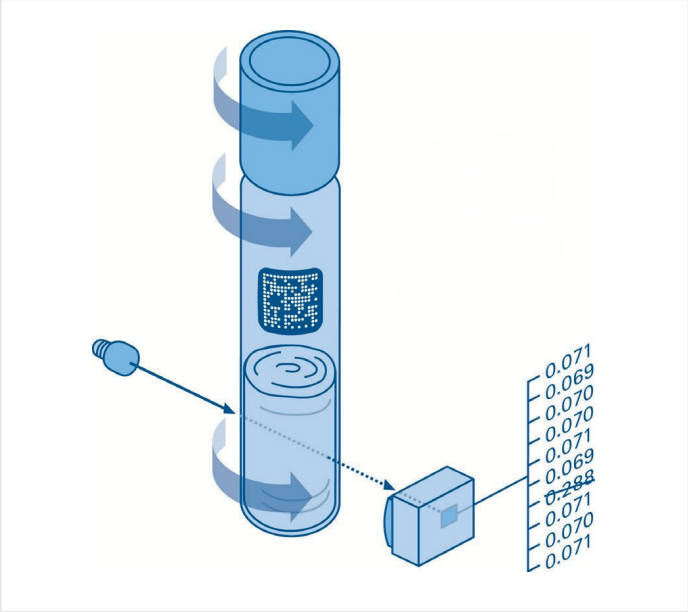
*Available on workflow camera-enabled versions only

Is your cuvette scratched or dirty?

Hach's Solution: **10-Fold Measurement**

Overview

The 10-fold measurement technique is able to give accurate results, even if the cuvette has scratches, fingerprints, dust, or defects - regardless of the position the cuvette is placed into the measurement cell.

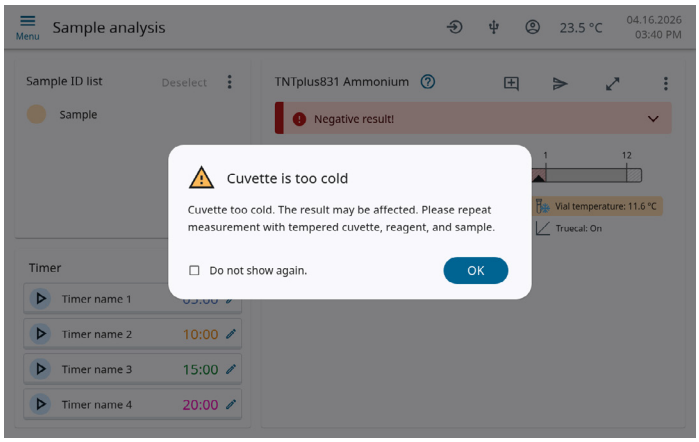


How It Works

- The instrument spins the vials and measures 10 times.
- Up to two outlier results are eliminated to achieve the most accurate result.
- The instrument then averages the results.

Is your cuvette too cold or hot during measurement?

Hach's Solution:
Temperature Warning & Temperature Compensation



Overview

Temperature Warning: Each method requires a specific workflow, and cuvette tests sometimes must be measured at a certain temperature to guarantee the best accuracy and reliability of the result. The DR4900 measures the temperature of the cuvette test and displays a warning if it's not in the correct range.

Temperature Compensation: For temperature-sensitive methods (such as Ammonia), results will differ if the same sample is prepared and measured at different temperatures. The DR4900 measures the temperature of the cuvette test and corrects the result in accordance with a temperature compensation algorithm, ensuring reliable results regardless of analysis temperature.

How It Works

The cuvette temperature is measured using an integrated IR thermometer.

Temperature Warning:

- Temperature and result are compared with a test- and result-specific limit value.
- This limit value indicates the temperature at which the result is significantly affected.
- A warning is shown only if the result is significantly affected.

Temperature Compensation:

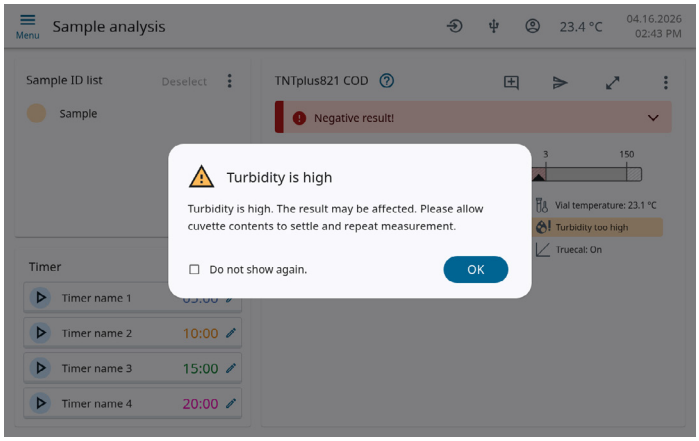
- The photometric result is corrected using a temperature compensation algorithm.

Why It Matters

- Reduces temperature-related measurement variability.
- Delivers results consistent with calibration conditions.
- Improves accuracy across normal working temperature ranges.

Is your sample too turbid?

Hach's Solution: **Turbidity Alert**



Overview

Even if it's not visible, turbidity can have an important impact on measurement accuracy. A common example is Chloride, which can create turbidity in a COD cuvette after digestion.

During analysis, the DR4900 determines the turbidity of the cuvette nephelometrically in addition to the photometric measurement and compares it with a test- and result-specific limit value. This limit indicates the turbidity level above which the measured value is significantly impaired. Because increased turbidity increases extinction, it can result in either an increased or decreased concentration display, depending on the calibration.

How It Works

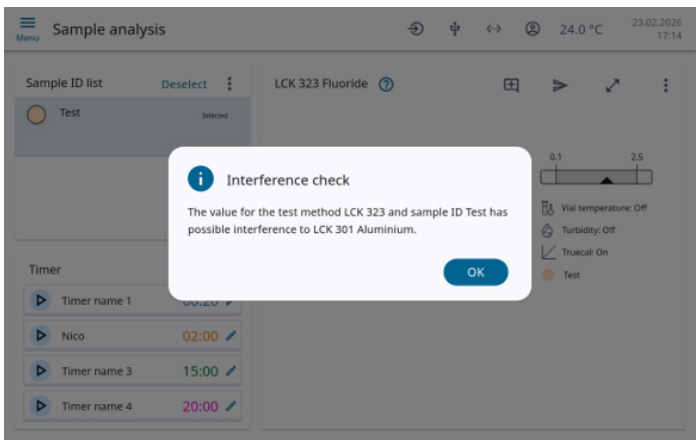
- A built-in infrared lamp (860 nm) measures turbidity at a 90° angle during analysis.
- The instrument evaluates scattered light relative to the absorbance of the reagents in the vial.
- A dynamic, test-specific turbidity threshold assesses whether turbidity will influence the result.
- If turbidity is outside the acceptable test-specific range, the instrument displays a warning.

Why It Matters

- Particles in samples or reagents — often invisible to the human eye — can increase absorbance and may lead to higher or lower measurement results, depending on the test.
- Turbidity effects are not obvious and vary by test chemistry and color intensity (e.g., COD tests with mercury precipitates).
- Protects data quality by focusing on turbidity's actual influence on absorbance, not just its absolute level.
- Helps users identify problematic sample conditions before results are used or reported.

Does your sample contain a chemical interference?

Hach's Solution: **Interference Check**



Overview

Samples can contain substances which have not been correctly removed and which will interfere with the method of the parameter you want to measure.

The DR4900 will alert the user if there is a risk of significant interference which could have an impact on the measurement accuracy.

How It Works

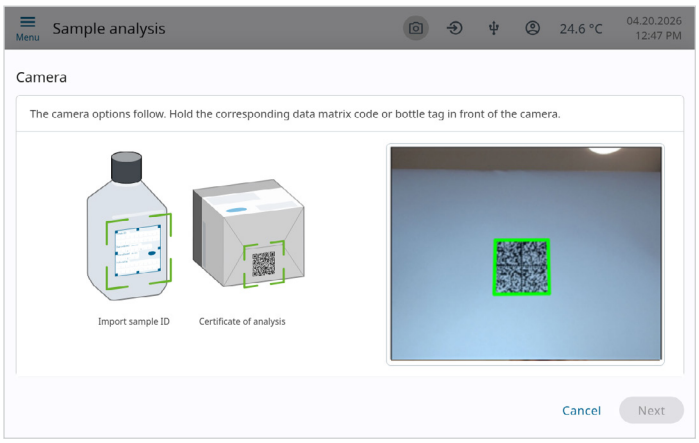
- The Sample ID feature allows the DR4900 to compare between several measurements.
- When performing multiple different methods on samples with the same Sample ID, the DR4900 will check for interferences.
- The instrument has an interference table for each measured parameter (interferent / concentration).
- If interference check is on, all subsequent measurements are checked according to the table.
- If there is a risk of interference due to another parameter on the same sample, an alarm message is displayed during measurement of the potentially impacted sample.

External Camera & Smart Workflow Features

The **DR4900** can be purchased with external camera that enables additional Smart Workflow features through QR code recognition and intelligent label reading. By using the camera during routine analysis, users can access batch-specific documentation directly on the instrument and improve sample identification without manual data entry. These features help reduce transcription errors, improve consistency, and support quality tracking directly at the point of measurement.

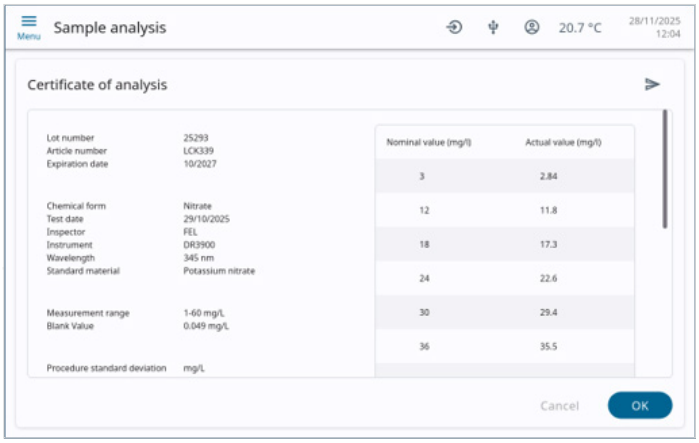
Is accessing and tracking Certificate of Analysis (COA) data during analysis time-consuming or inconsistent?

Hach's Solution:
On-screen Certificate of Analysis (COA)



Overview

Certificates of Analysis (COA) can be accessed directly with the cuvette test box via a printed 2D code. Using the DR4900 camera, the COA can be accessed instantly on the instrument screen without downloading files from the web. This allows users to document and track quality information at the time of measurement and supports quality control activities directly in the lab, without needing to access the internet.



How It Works

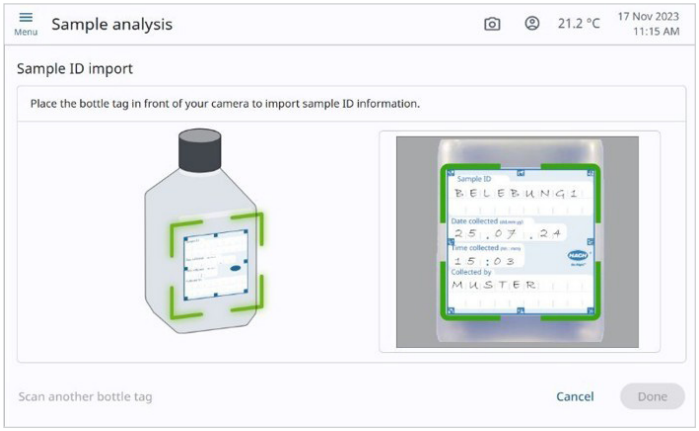
- A 2D code printed on the cuvette test box contains batch-related COA data.
- The DR4900 camera scans the 2D code during analysis.
- The corresponding COA is displayed directly on the instrument screen and can be downloaded or printed if required.

Why It Matters

- Provides immediate access to batch-specific quality documentation.
- Eliminates the need to search for or download COAs from external systems.
- Supports quality tracking and documentation at the point of use.

Are manual sample ID entry and transcription errors affecting data consistency and traceability?

Hach's Solution: **Sample ID Recognition**



Overview

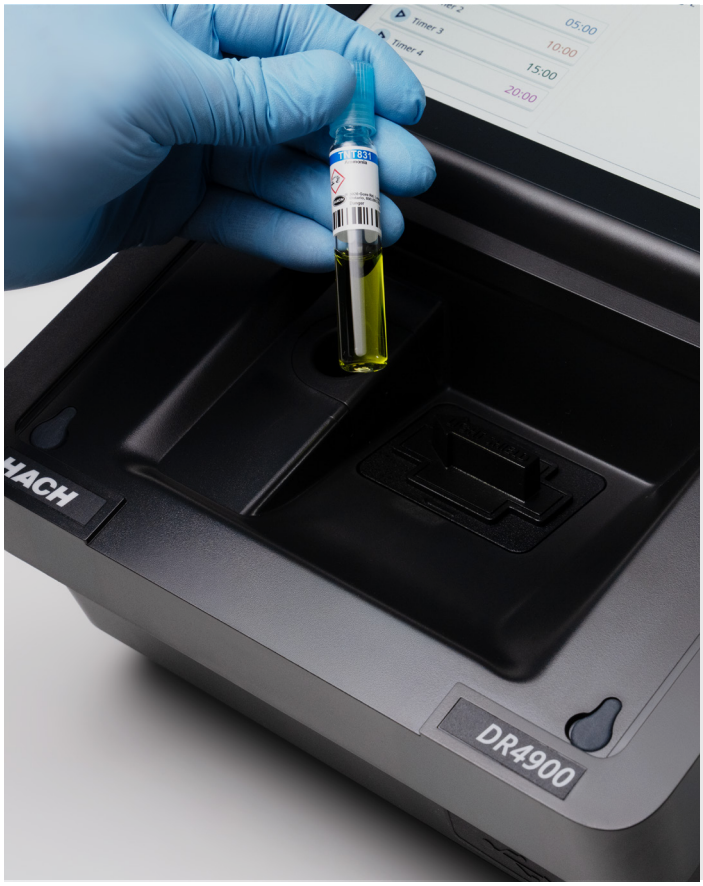
The DR4900 camera supports sample identification by reading handwritten sample labels, reducing the need for manual data entry. This improves consistency in sample tracking and helps minimize transcription errors during routine analysis.

How It Works

- The camera captures sample identification information from handwritten labels.
- Sample ID information is automatically imported into DR4900 Sample ID list.

Why It Matters

- Reduces transcription errors caused by manual sample ID entry.
- Improves consistency and traceability of sample data.



Sustainability & Reagent Recycling

- Hach® contributes to the sustainable protection of our aquatic ecosystems with its products and services.

The **Hach Environmental Center** is dedicated to supporting the circular economy through its innovative recycling service for cuvette tests in Europe. Located in Düsseldorf, Germany, the Environmental Center has helped divert more than 3,500 tons of hazardous waste from landfill over the past 10 years, achieving a **recyclable material recovery rate of approximately 75%.**

Over the past 25 years, Hach associates have worked to continuously improve recycling processes to ensure that components of Hach cuvette tests can be recovered and reused as raw materials. Each year, around 150 customers visit the plant to see firsthand Hach's commitment to the planet and responsible waste management.

Extended Producer Responsibility: Expanding Our Positive Environmental Impact

At Hach, sustainability considerations are increasingly informing our product lifecycle—from design and development to the systems and partnerships that support responsible management at end of life. As outlined in the Products section, we prioritize durability, efficiency, and recyclability where possible. But our responsibility doesn't stop at the point of sale. Across Europe, Hach participates in authorized collective schemes that oversee the handling of packaging, batteries, as well as electrical and electronic equipment, in line with national regulations. As part of this participation, Hach provides relevant data and supports the systems that enable the environmentally sound collection, treatment, and recycling of these materials. As Extended Producer Responsibility frameworks continue to evolve, we are taking steps to strengthen our internal processes and expand our engagement wherever applicable. These efforts reflect our commitment to responsible resource management and our role in supporting a more circular economy.

EcoVadis

We don't just claim to invest in sustainability measures, we look for ways to measure and validate. Enter EcoVadis, a globally recognized provider of business sustainability ratings. In 2025, Hach received a Silver Medal from EcoVadis. This places us in the top 15% of more than 150,000+ companies rated by EcoVadis. The assessment includes 21 sustainability criteria across four core themes: Environment, Labor & Human Rights, Ethics and Sustainable Procurement. At Hach, we pride ourselves on our culture of continuous improvement where sustainability is a driving force that pushes us forward.

Test-by-Test Feature Availability

Please see below for a test-by-test summary of the availability of Temperature Warning, Turbidity Warning, and Temperature Compensation features.

YES = available at the launch of the DR4900

(YES) = planned for the first software update of the DR4900

LCK	Analyte	Truecal	Temperature-warning	Turbidity-warning	Temperature-compensation
302	Ammonium	**YES**	(YES)	(YES)	(YES)
303	Ammonium	**YES**	**YES**	(YES)	**YES**
304	Ammonium	**YES**	**YES**	(YES)	**YES**
305	Ammonium	**YES**	**YES**	(YES)	**YES**
502	Ammonium		(YES)	(YES)	(YES)
503	Ammonium	**YES**	(YES)	(YES)	(YES)
505	Ammonium	**YES**	(YES)	(YES)	(YES)
311	Chloride		(YES)	**(YES)**	
114	COD	**YES**	**YES**	**YES**	
214	COD		(YES)	(YES)	
314	COD	**YES**	**YES**	**YES**	
514	COD	**YES**	**YES**	**YES**	
614	COD	**YES**	**YES**	**YES**	
714	COD	**YES**	(YES)	(YES)	
914	COD	**YES**	**YES**	**YES**	
1014	COD	**YES**	**YES**	**YES**	
1414	COD	**YES**	**YES**	**YES**	
1714	COD		(YES)	(YES)	
1814	COD		(YES)	(YES)	
1914	COD		(YES)	(YES)	
014	COD	**YES**	**YES**	**YES**	
LCI400	COD		**YES**	**YES**	
LCI500	COD		**YES**	**YES**	
339	Nitrate	**YES**	**YES**	(YES)	
340	Nitrate	**YES**	**YES**	(YES)	
540	Nitrate	**YES**	(YES)	(YES)	
341	Nitrite	**YES**	(YES)	(YES)	
342	Nitrite	**YES**	(YES)	(YES)	
343	Nitrite		(YES)	(YES)	
348	Phosphate	**YES**	(YES)		
349	Phosphate	**YES**	(YES)		
350	Phosphate	**YES**	(YES)		
351	Phosphate	**YES**	(YES)		
049	Phosphate		(YES)		
	sTKN	**YES**			
138	TNb	**YES**	**YES**	(YES)	
238	TNb	**YES**	**YES**	(YES)	
338	TNb	**YES**	**YES**	(YES)	
438	TNb	**YES**	(YES)	(YES)	

HACH®

Build **confidence** in your analysis

DR4900: Smarter technology for reliable results.

HACH®

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