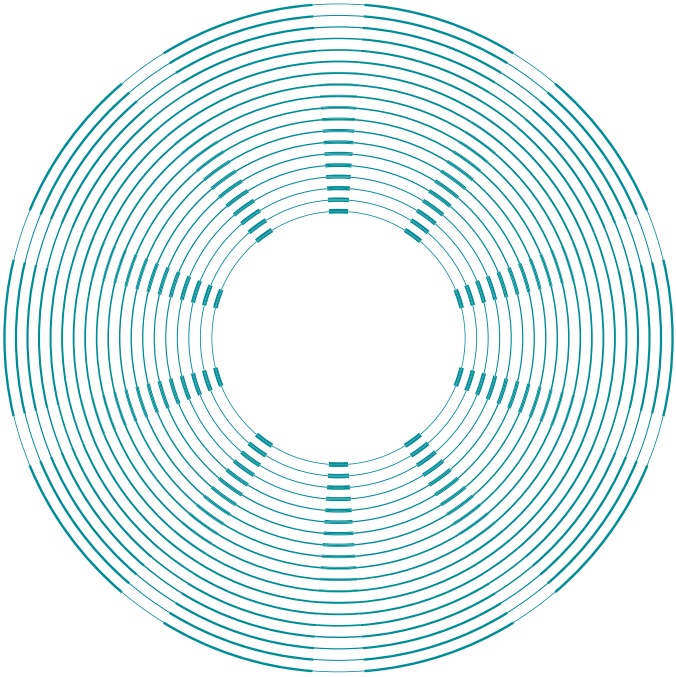
User Manual



iCheck
Fluoro

iCheck **Fluoro** is a testing device to measure **Vitamin A**, empowering you with instant results to make confident decisions.

BioAnalyt

Quality Guarantee

Dear customer,
Congratulations on your acquisition of iCheck™ Fluoro!

iCheck Fluoro will be your reliable partner for the vitamin A analysis. iCheck is a high-tech portable fluorometer with precise and reliable results.

iCheck is produced following strict rules of quality assurance according to ISO 9001:2015. This is accomplished by the use of high-grade components and equipment as well as a streamlined production process. This process includes quality controls of each component and rigorous calibration of the device by trained technicians with standards produced according to ISO 17025 standard.

Your iCheck Fluoro comes with a 2-year warranty.

Please note: If the device is used in a manner that does not comply with the operating instructions, the protection may be impaired.

If you have any questions, please contact us by calling ***+49 (0)33 28 35 15 000***
or sending an e-mail to ***support@bioanalyt.com***.

www.bioanalyt.com
LinkedIn www.linkedin.com/company/bioanalyt

CE TÜV NORD ISO 9001 TOP 100 TOP 100

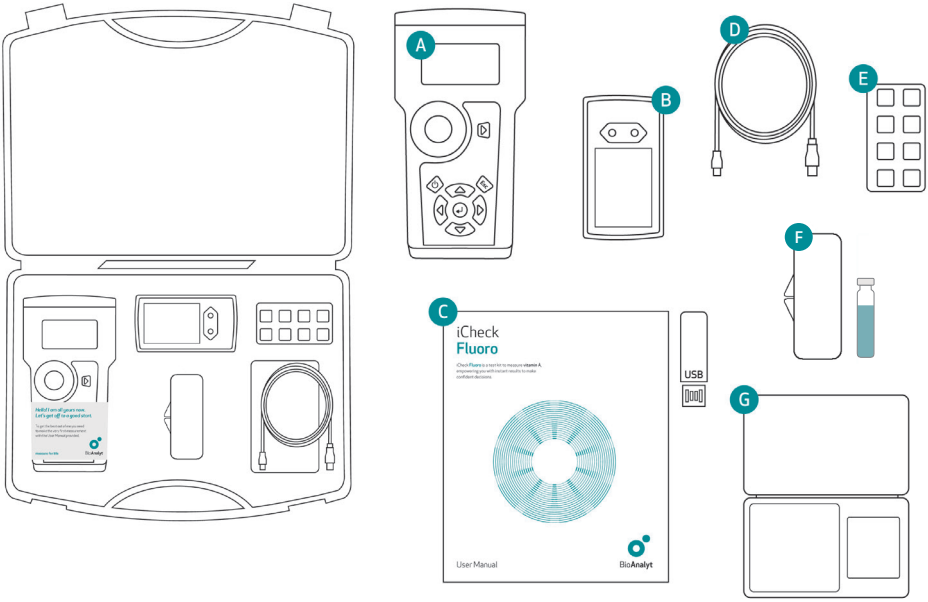
Development, manufacture and sales of all BioAnalyt test kits (devices, reagent vials) are carried out in accordance with ISO 9001:2015 and have been certified by TÜV NORD, Germany.

Contents

Version 2.5

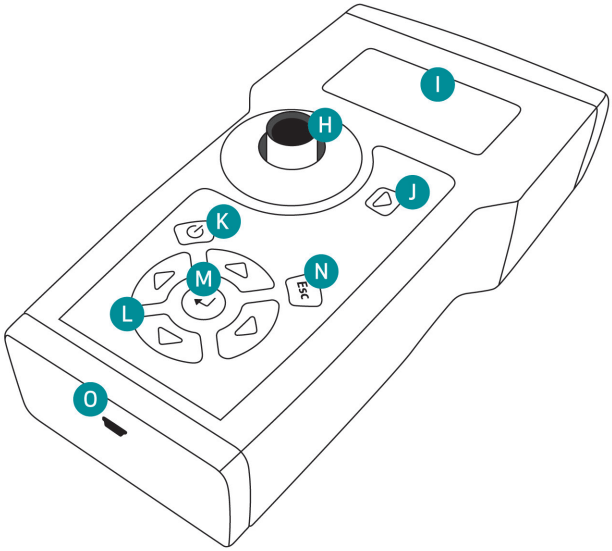
Check your **Case Content**

Your iCheck **Fluoro** is delivered in a portable case.
The items included in the case are listed below.



- **A** iCheck Fluoro with metal cap
- **B** Battery charger and 4 rechargeable batteries
- **C** User Manual and software on USB stick
- **D** USB cable for data transfer to computer
- **E** Stand for reagent vials
- **F** Fluoro Standard
- **G** Digital balance and calibration weight

Device
Description



- **H** Measurement chamber for iCheck Fluoro reagent vials with removable metal cap (not shown)
- **I** Display monitor
- **J** Measurement key
- **K** Power key (On/Off)
- **L** Menu Navigation keys: left, right, up, down
- **M** Enter (OK) key
- **N** Escape key
- **O** USB cable mini-port for data transfer

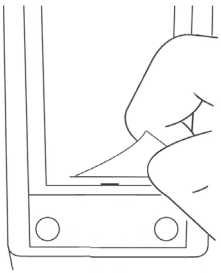
Use the 4 keys marked with triangles to navigate the menu structure of the device. To select an option, press the enter key. To exit an operation or to navigate one directory up, press the escape key.

Not shown:
Battery compartment on the bottom side.

Instructions
Fluoro

1 Insert the batteries

- The iCheck is equipped with 4 rechargeable batteries (AA). Please charge them fully before device use.
- Open the battery compartment at the back of the iCheck by lifting the tab.



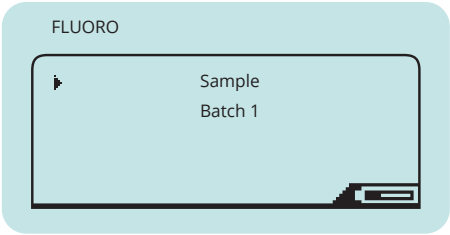
- Insert the batteries as indicated.

Note:
The batteries can be recharged with the supplied charger. It takes about 2-3 hours to fully charge an empty battery. Charging is best performed within the temperature range of +5 °C to +45 °C.

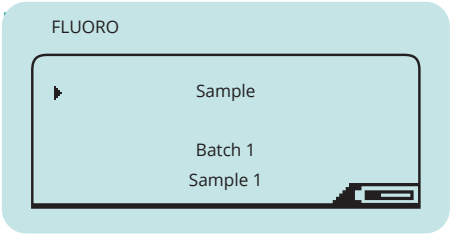
Important: iCheck must be used with charged batteries at all times even when connected to the computer via USB cable.

2 Switch on the device

- Start by placing the iCheck on a flat and stable surface. Make sure the metal cap is covering the measurement chamber.
- Switch on your iCheck by pressing the power key.
- You are automatically in the measurement mode “Sample” and you can proceed with the measurement. Before your first measurement the monitor will display “Batch 1”.



- After your first measurement your device will display “Batch 1, Sample 1”.



- The iCheck has an energy-saving function. 10 minutes after the last keystroke the fluorometer will switch off automatically.

3 Control the device

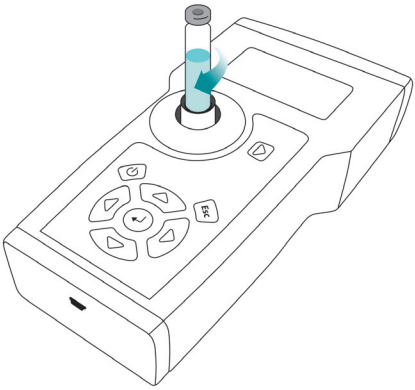
- Perform calibration control of your iCheck Fluoro before each measurement set.
- To do so, use the Fluoro Standard vial provided in your iCheck case.
- The Fluoro Standard must be stored upright in its casing at room temperature. The expected value and the shelf life is indicated on the casing.

Measure Fluoro Standard

- Using the left and right navigation keys to enter "Device Control" mode.
- Press the measurement key. The device will display "Insert Standard".
- Carefully remove Fluoro Standard from its casing. Control the glass surface of the vial. If the glass is not clean, wipe it with a paper tissue before inserting into the iCheck.
- Remove the metal cap and place the Fluoro Standard into the measurement chamber and cover it with the metal cap.
- Press the measurement key. This will initiate one of 4 measurements of your vial.

Reposition the vial

- When the display indicates "...next position", the position of the vial must be changed in order to take another measurement.
- To do this, lift the metal cap, turn the vial in the measurement chamber, and cover again the vial with metal cap.
- Press the measurement key.
- Repeat repositioning of the vial as many times as indicated by the display.



Note:
Turn the vial by ¼ of a turn. Repositioning and multiple measurements of the same vial increase the precision of your results.

Instructions
Fluoro

Control the result

- The value displayed should be within the range indicated on the casing of the Fluoro Standard.
- If the value is within the range proceed directly with measurement.
- If the value is outside the indicated range, repeat the measurement. If the value remains outside the indicated range, contact BioAnalyt Support at support@bioanalyt.com for assistance.

Note:
A new Fluoro Standard can be purchased from BioAnalyt.
For further information, contact BioAnalyt Support at support@bioanalyt.com.

5 Prepare your sample

- iCheck Fluoro quantitatively analyzes vitamin A in food and biological fluids. iCheck Fluoro measurement range is 50 - 3000 µg retinol equivalents (RE)/L. µg stands for micrograms.
- If the expected concentration of your sample is above iCheck Fluoro measurement range, dilute your sample in distilled or bottled water to fit the middle of the measurement range (i.e. 1000 µg RE/L).
- Record the weight of the sample, the total diluted sample volume and calculate the dilution factor (DF): DF = (mL total sample volume)/(g sample weight).
- For support with dilution and calculation, please contact BioAnalyt Support at support@bioanalyt.com.

Weigh in your sample

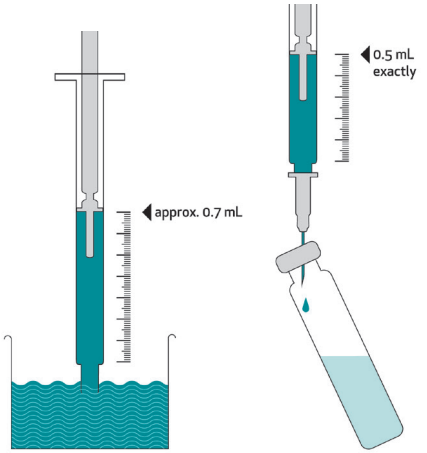
- Place a weighing dish on the balance and press Z/T to 0 (tare) the weight of the dish. The display should show 0.0 g. Now you are ready to weigh in your sample.
- Weigh in your sample and record the exact weight in your documentation.
- Next, measure and record the water volume in your documentation.
- Mix your sample and water until a homogenous suspension. Record the final total volume of your sample solution for dilution factor calculation.

Important: The vitamin A concentration of the sample solution has to be in the measurement range of iCheck Fluoro which is 50 - 3000 µg RE/L.

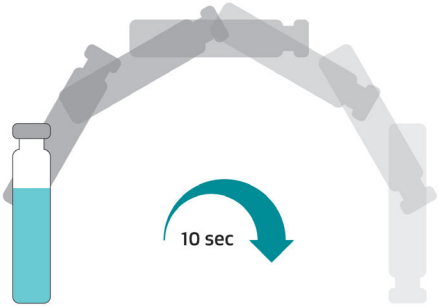
Instructions
Fluoro

6 Inject your sample

- Mix your sample well. Use a new syringe without a needle and take up more than approx. 0.7 mL of the sample. Clean the end of the syringe with a paper tissue. Place the needle in the syringe.
- Hold the syringe with the needle pointing up and gently tap the syringe with your fingers to get the air bubbles to move up. Adjust the volume of the sample to exactly 0.5 mL (500 µL) by ejecting excessive volume into the paper tissue. Make sure no air bubbles are left inside.
- Slowly inject 0.5 mL of the sample solution into a new iCheck Fluoro reagent vial through the red septum.



- Vigorously shake the vial for 10 seconds.



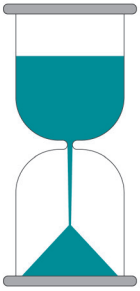
- After shaking the vial, the content should appear as a uniform solution.

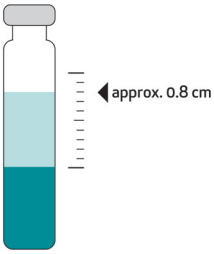
Important: Inject your diluted sample into the iCheck Fluoro reagent vial within 5 minutes of mixing it with water.

7 Reaction time

Wait 5 minutes

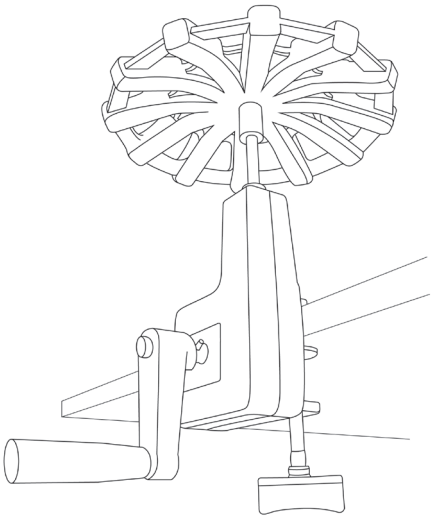
- Now let the vial stand still for 5 minutes for the extraction of the vitamin A into the upper phase. After waiting the solution in the vial should appear in two distinct phases.





8 Check phase separation

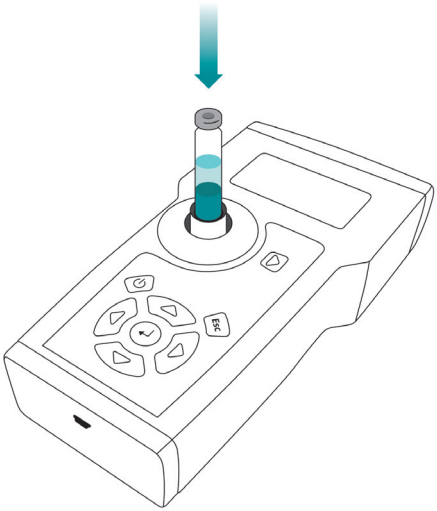
- To proceed with the measurement you must observe a clear upper phase of approx. 0.8 cm.
- If you do not observe a clear upper phase then briefly centrifuge the vial at low speed (approx. 300 rpm) for 1 minute.
- Portable hand centrifuge can be purchased from BioAnalyt.
- When no centrifuge is available, let the vial stand for at least 1 hour until a distinct phase separation has occurred.



Instructions
Fluoro

9 Insert the vial

- Control the glass surface of the vial. If the glass is not clean, wipe it with a paper tissue before inserting into the iCheck.
- Be sure to hold the iCheck reagent vial only by its top. Insert the vial into the iCheck and cover the vial with the metal cap.



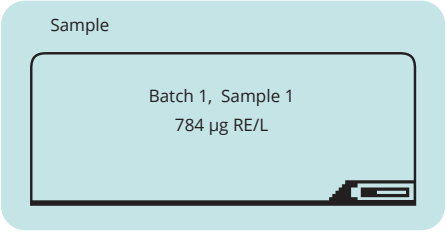
Important: Take care that no other objects, liquid or dust enters the measurement chamber. This would result in damaging the sensor and interfere with accurate measurement.

10 Start the measurement

- Using the left and right navigation keys, select ”Sample” mode.
- Press the measurement key. The device will display “Insert Sample”.
- Press the measurement key again. This will initiate one of 4 measurements of your sample.
- Reposition the vial as indicated by the display. Follow instructions in the section “Control the device > Reposition the vial” on page 7.

11 Result display

- When the sample measurement has been completed, iCheck Fluoro calculates the average over the four measurements. The result is displayed in µg RE/L.
- If you diluted your sample before measuring, multiply the result by the dilution factor. For support, contact BioAnalyt at support@bioanalyt.com.



Note:
For conversion of µg RE to other units please refer to the following factors:
1 µg RE = 1 µg retinol
1 µg retinol = 1.15 µg retinyl acetate
1 µg retinol = 1.83 µg retinyl palmitate
1 µg retinol = 3.33 IU
1 IU = 0.3 µg RE

12 Data storage

- For documentation purposes, iCheck Fluoro has an internal memory to store up to 600 individual measurements including such information as batch number, sample number, date, time, measurement temperature and result.
- For detailed description of the data transfer to a computer please refer to the “Data Transfer” section.

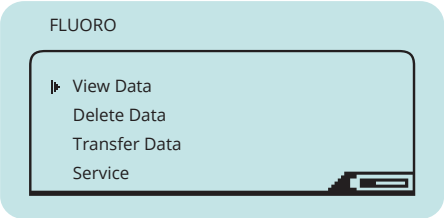
Instructions
Fluoro

13 Disposal

- Reagent vials contain hazardous chemicals and are disposed of according to national regulations for hazardous materials. Collect the vials in a container and hand them over to a chemical waste company. Material safety data sheet (MSDS) of the reagent vials is provided upon request with each shipment.
- Take extra care when disposing of the used needles to prevent injury: discard used needles into special container.

Menu
Functions

By pressing the enter key you enter the menu of iCheck Fluoro. Using the arrow keys you can scroll through the different options in the menu and with the enter key you can choose a function.



View data

You can select the following options:

- View Samples
  To display individual measurement results.

Delete data

You can select the following options:

- Delete Sample
  To delete an individual result.
- Delete Batch
  To delete a batch with several measurements.
- Delete File
  To delete the file with all measurements performed on the device.
- Delete Memory
  To delete all measurements performed on the device.

Transfer data

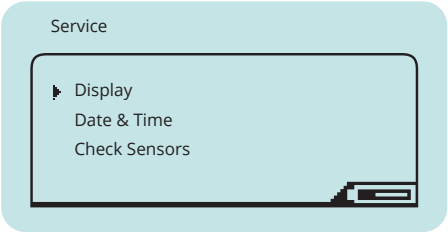
Use this function to transfer the data from the iCheck to your computer. Refer to the section “Data Transfer” in this manual.

Note:
Data menu function is only displayed after a minimum of 1 measurement. Data Transfer menu function is only displayed after a minimum of 2 measurements.

Menu
Functions

Service

To configure your iCheck you can select the following options:



- Display
  Set the brightness and contrast of the display.
  Date & Time
  Set the correct time and date of your time zone.
- Check Sensors
  Please only use if indicated by BioAnalyt Support.

Note:
The Calibration Data of your iCheck can be provided on request. For this contact BioAnalyt Support at support@bioanalyt.com and provide the serial number indicated on the back of your device.

Software Installation

Software installation

- The data stored on your iCheck can be transferred to a computer. To do so, install *BioAnalyt Lab* software which is provided on the USB stick  .
- Initiate *BioAnalyt Lab* software set-up by double-clicking on the “Set-up” icon on the USB stick. Follow the instructions on your computer and make sure that *BioAnalyt Lab* is installed in the “Programs” directory. Create a shortcut to your desktop if you wish to. Finish installation by clicking “Finish”. The driver will automatically be installed.
- Upon accepting the License Agreement, a window will pop up where you can enter your personal information. This information can be viewed and edited by clicking on the “Settings” window.

Note:
BioAnalyt Lab software only works with Windows operating system (XP and later versions).

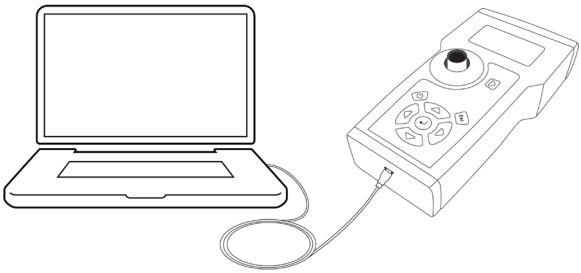
Software update

- *BioAnalyt Lab* software can be updated by clicking on the “Update” window. For the program to detect whether there are new updates available from BioAnalyt computer must be connected to the internet.
- If your current version (e.g. 1.1.0) is different from the newest version click on the “Update” key to proceed with the software update.

Data Transfer

- Start *BioAnalyt Lab* program by double-clicking the link on your desktop or by going to the Start Menu >> Programs >> BioAnalyt GmbH >> *BioAnalyt Lab* .
- Plug in your iCheck to your computer via USB cable. A configuration window will appear after you connect your device to the computer. Here you can enter the information about your device. The serial number of the device can be found on the back side of the iCheck.
- Now the information about iCheck is saved on your computer and will be displayed the next time you connect your iCheck to your computer. This way, information about multiple iCheck devices can be stored on your computer.
- To initiate data transfer click on “Start Transfer”. Wait for data transfer to proceed and the sign “Data Transfer in Progress” to disappear.
- Now, all your data is saved and listed under “Documents”. You can view, save and edit this data by clicking on the “Documents” window.
- To save your data in CSV or EXCEL format select the file in the “Documents”, select the format and save the files to the desired location.

Note:
Power supply units and laptops/PCs must comply with appliance class III.



Technical Data

iCheck Fluoro is a state-of-the–art portable fluorometer for measuring quantitatively vitamin A concentration in food and biological fluids. The iCheck device is specifically developed and equipped with innovative technology to enable technically sophisticated measurement of fluorescence. iCheck Fluoro displays vitamin A concentration in µg RE/L.

iCheck Fluoro is equipped with the latest UV light emitting diode (LED) technology. Using LEDs as a light source eliminates all known problems with halogen lamps used by other readers. Modern LEDs emit particularly stable light and have very low energy consumption. Each iCheck Fluoro is calibrated at the production site in Germany with vitamin A standards according to quality management system. This eliminates the need for the user to calibrate the device. Based on the half-life of the LEDs, approximately 10 million measurements can be conducted on iCheck. iCheck Fluoro reagent vial is a 2-in-1 disposable extraction vial and cuvette. iCheck Fluoro reagent vials contain a patented combination of reagents developed to efficiently extract vitamin A from the sample. One iCheck Fluoro test kit package contains 100 reagent vials each with a certified volume of reagents. No additional chemicals or equipment are required.

Technical Data

Quality assurance

iCheck and iCheck Fluoro Test Kit are produced according to quality management system (DIN EN ISO 9001:2015) certified by TUV Nord in Germany.

TECHNICAL DATA	
Sample	
Analyte:	Vitamin A (retinol) as retinyl palmitate, retinyl acetate and other esters
Sample:	Food: premix, liquid milk, milk powder, flour, sugar, bouillon powder; biological fluids: breast milk, whole blood, serum
Sample preparation:	For solid samples: dilution and homogenization in distilled or bottled water
Sample volume per analysis:	0.5 mL (500 µL)
Concentration range:	>0.05 ppm (mg/kg), samples above 3.0 ppm must be diluted in water
Device	
Analytical method:	Fluorimetric determination of retinol concentration using ultraviolate (UV) excitation
Units displayed:	µg RE/L, RE – retinol equivalents, µg - microgramms
Linear range:	50 – 3000 µg RE/L
Calibration:	Factory set (standards included for control)
Time per analysis:	< 10 min
Environment:	20 –30°C, no direct sunlight
Accuracy at 95% confidence interval at 25°C:	±5-25% (depends on the sample type)
Method comparison:	High-performance liquid chromatography (HPLC)
User training:	1 day training
Use:	Laboratory and field
Data output:	Sample #, Batch #, Result, Date, Time (in transferred data)
Connectivity and data:	Results are stored in the device and transferred to a PC via USB
Power source:	NiMH rechargeable batteries included; AA 1.2 or 1.5V
Warranty:	2 years
Device weight:	0.45 kg
Device dimensions:	11 x 4 x 20 cm (W x H x L)
Voltage (recommended)	5V ±10%
Voltage (Max.)	5.5V
Test Kit	
Content:	100 reagent vials; 100 syringes - 1.0 mL; 100 needles - 1.6mm x 25mm.
Chemical composition:	n-Hexan and alcohols
Volume per reagent vial:	2.0 mL
Shelf life:	12 months at 20 –30°C, no direct sunlight, upright
Dimension of test kit:	26 x 14.5 x 16.5 cm
Disposal instructions:	Hazardous waste

Frequently Asked Questions

Power supply

iCheck does not turn on.

Make sure that the batteries are fully charged. In the lower right corner of the display a battery symbol is shown indicating the remaining battery charge. To recharge the batteries, place them in the charger provided in the case, connect it to a power supply and wait until the light turns green, indicating that power is at 100%. Place the batteries back in the device, and switch it on. If iCheck is still not turning on, please contact BioAnalyt Support.

May I use other batteries?

1. You may use other AA/2100mAh/1.2V batteries. However, you cannot recharge those with the supplied charger.

2. Make sure the charged batteries are present at all times during the measurement, even when connected to a computer. Device will not run measurements properly if solely connected to a computer.

What is the overvoltage category?

The overvoltage category is I .

Frequently Asked Questions

Measurement

Fluoro Standard value is out of range. What might be the reason for this?

1. Check the expiration date of the Fluoro Standard indicated on the casing.

2. Check, if the Fluoro Standard vial surface is clean. If not, wipe the vial with paper tissue (optional: wet the tissue with alcohol to improve the cleaning).

3. Check if the protective metal cap of the device was used correctly while measuring.

4. Check if the measurement was made in the specified temperature range of 20 - 30 °C.

5. Make sure that you did not measure in direct sunlight.

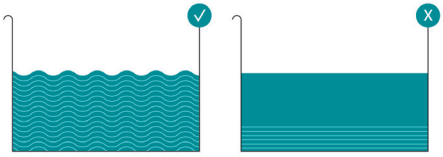
Do I need to calibrate iCheck Fluoro?

No, there is no need to calibrate iCheck Fluoro, because the device is calibrated during the manufacturing process and calibration is programmed into the software.

The result I received for a sample is higher/lower than expected. What might be the reason for this?

1. Incorrect volume:
Make sure, that exactly 500 µL (0.5 mL) of the homogenized sample is injected into iCheck Fluoro reagent vial.

2. The accuracy also depends on the mixing of the sample. When measuring solid samples make sure that you do not wait for the particles to settle down in the water. Mix the sample and immediately take up the suspension into the syringe.



3. The operator was not well trained. Contact BioAnalyt to obtain training and iCheck certification.

Frequently Asked Questions

Measurement

What might interfere with the measurement procedure?

1. Incorrect sample extraction:
It is very important, that the extraction and phase separation has occurred. Wait for at least 5 minutes.

2. Unclean vial surface:
Make sure the reagent vial you are measuring is absolutely clean and does not have any fingerprints on it. If not, wipe the vial with a paper tissue (optional: wet the tissue with alcohol to improve the cleaning).

3. Sunlight:
Do not measure in direct sunlight.

How should I store the reagent vials?

iCheck reagent vials must be stored upright at room temperature and protected from direct sunlight.

What is a batch and how can I select a new batch?

For selecting a new batch press the right arrow key. The batch function is used to group samples, e.g. samples from 1 day or 1 region can be measured in batch 1. If you proceed to measure the samples of a different day or region, select a new batch (i.e. 2).

Do temperature or humidity influence the iCheck measurements?

Please follow these conditions to operate iCheck safely:
1. Altitude up to 2 000 m;

2. It is recommended to measure at an ambient temperature between 20 - 30 °C (68 - 86 Fahrenheit). Do not use iCheck at temperatures above 40 °C.

3. It is further recommended to store the iCheck and the iCheck reagent vials at least two hours before starting the measurement in the room in which the measurement will be performed. This procedure ensures that both, the vials and the device have the same temperature.

4. The device can be used indoors or outdoors, as long as there is no direct sunlight.

5. Maximum relative humidity of 80 % at 30 °C.

Can I use iCheck under wet conditions?

No, the device is not intended to be used under wet conditions. Condensation must be avoided.

Frequently Asked Questions

General

Which form of vitamin A can be measured?

iCheck Fluoro measures added vitamin A in the form of both retinyl palmitate and retinyl acetate – the 2 most common vitamin A fortificants. In biological fluids such as milk and blood vitamin A is present as a variety of retinyl esters that are also measured with iCheck Fluoro.

Does the Data Transfer work with other operating systems like Apple OSX etc.?

No, BioAnalyt Lab may only be used with Windows Operating System.

How can iCheck Fluoro test kits be ordered?

An order can be placed by visiting the BioAnalyt website www.bioanalyt.com or by sending e-mail to contact@bioanalyt.com.

What is the pollution degree for this equipment?

The expected pollution around iCheck was established in the standard of degree 2: Normally only nonconductive pollution occurs. Ocasionally, however, temporary conductivity caused by condensation maybe be expected.

Where do I get help with other questions that are not mentioned here?

We would love to hear from you! Please send us an e-mail at support@bioanalyt.com.

You can also join the discussion by following us

www.facebook.com/bioanalyt

www.linkedin.com/company/bioanalyt

USB Stick

Find the *BioAnalyt Lab* Software and further product information on the USB stick.

measure for life

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contact@bioanalyt.com · www.bioanalyt.com