

## Magnesium

### Principle

Magnesium ions react with metal phthaleins to give a violet colour.

### Range of Application

Raw-, drinking-, and boiler water, soils, substrates, nutrient solutions

### Storage Information

The test reagents are stable at +15 to +25°C up to the expiry date given on the package.

### Interferences

There are no known interferences when the tests are used with drinking water and boiler water.

There is no interference from:

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**Measuring range I** < 20 mg/L calcium

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**Measuring range II** < 100 mg/L calcium

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The measurement results must be subjected to plausibility checks (dilute and/or spike the water sample).

### pH/Temperature

The pH of the sample must be between pH 4 and pH 9.

The temperature of the sample and reagents must be between 15 and 25°C.

### CADAS 100 (LPG 185 / ≥ LPG 210)

If this test is not already stored in your instrument please ask your HACH LANGE Agency for programming instructions.

### Safety Advice

On grounds of quality and reliability, the analysis should be carried out only with original HACH LANGE accessories.

### Data table

## LCK 326

<b>LP2W</b>	98/04
<b>Mg I</b> • F <sub>1</sub> = 0 • F <sub>2</sub> = 27.16 • K = 4.85	
<b>Mg II</b> • F <sub>1</sub> = 0 • F <sub>2</sub> = 106.7 • K = 4.5	
<b>CADAS 30/30S/50/50S</b>	98/04
<b>Mg I</b> • λ: 572 nm • Pro.: 1 • F <sub>1</sub> = -22.53 • F <sub>2</sub> = 22.53 • K = 5.201	
<b>Mg II</b> • λ: 572 nm • Pro.: 1 • F <sub>1</sub> = -85.23 • F <sub>2</sub> = 85.23 • K = 4.586	
<b>ISIS 6000/9000</b>	98/04
<b>Mg I</b> • λ: 565 nm • Pro.: 1 • F <sub>1</sub> = -22.56 • F <sub>2</sub> = 22.56 • K = 4.905	
<b>Mg II</b> • λ: 565 nm • Pro.: 1 • F <sub>1</sub> = -86.3 • F <sub>2</sub> = 86.3 • K = 4.163	
<b>CADAS 100 / LPG 185</b>	98/04
<b>Mg I</b> • λ: 572 nm • F <sub>1</sub> = -23.17 • F <sub>2</sub> = 23.17 • F <sub>3</sub> = 5.44	
<b>Mg II</b> • λ: 572 nm • F <sub>1</sub> = -87.11 • F <sub>2</sub> = 87.11 • F <sub>3</sub> = 4.77	
<b>CADAS 100 / ≥ LPG 210</b>	98/04
<b>Mg I</b> • λ: 572 nm • F <sub>1</sub> = -23.17 • F <sub>2</sub> = 23.17 • K = 5.44	
<b>Mg II</b> • λ: 572 nm • F <sub>1</sub> = -87.11 • F <sub>2</sub> = 87.11 • K = 4.77	

## Applies to LASA

## Magnesium

Edition 90/06

Pipette into the cuvette test

Buffer solution A (LCK 326 A)	3 mL
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Close cuvette and invert a few times until the freeze-dried contents are completely dissolved. After **2 min** thoroughly clean the outside of the cuvette and evaluate.

**Applies to  
LASA 1/plus, LASA 20/30, LP1W, LKT, LP2W,  
Photometer with Barcode-System,  
ISIS 6000, CADAS 200Basis,  
CADAS 100 (LPG 185) / (≥ LPG 210)**

## Magnesium

Edition 90/06

Pipette into the cuvette test

	Meas. range I	Meas. range II
Buffer solution A (LCK 326 A)	3.0 mL	3.5 mL

Close cuvette and invert a few times until the freeze-dried contents are completely dissolved. After **2 min** thoroughly clean the outside of the cuvette and evaluate.

## Magnesium

Edition 90/06

## Evaluation

1. Insert program filter with relevant symbol (see below).
2. Select test with relevant key.
3. Check program control number: **\_\_ : 14**
4. Insert sample cuvette.
5. Remove sample cuvette.

Pipette into the same cuvette

Sample	2 mL
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Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again.

*If more than one magnesium sample is to be measured start the next evaluation at point 2.*

Parameter	Symbol	Meas. range
Magnesium	326	0.5 – 10.0 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Select »Barcode Programs».
2. Select test number (see below).
3. Control number must be **4**.
4. Insert sample cuvette and press »Read 1».
5. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again and press »Read 2».

*If more than one magnesium sample is to be measured start the next evaluation at point 4.*

Parameter	Test-No.	Meas. range
Magnesium – Meas. range I (Mg I)	326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	326	10 – 50 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Press "Mode" key and check program control number:  
**\_\_ : 40**
2. Insert program filter **560 nm**.
3. Select test with "Mode" key.
4. Insert sample cuvette.
5. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again.

*If more than one magnesium sample is to be measured start the next evaluation at point 4.*

Parameter	Display	Meas. range
Magnesium – Meas. range I (Mg I)	Mg I LCK 326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	Mg II LCK 326	10 – 50 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Press any key.
2. Check program control number: **\_\_ : 40**
3. Select test with ↑ or ↓ key.
4. Insert sample cuvette.
5. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again.

If more than one magnesium sample is to be measured start the next evaluation at point 4.

Parameter	Display	Meas. range
Magnesium – Meas. range I (Mg I)	Mg I LCK 326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	Mg II LCK 326	10 – 50 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Insert filter **588 nm**.
2. Select »Dr. Lange« mode.
3. Select test number (see below).
4. Control number must be **4**.
5. Insert sample cuvette and press green key.
6. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

7. Insert sample cuvette again and press green key.

If more than one magnesium sample is to be measured start the next evaluation at point 5.

Parameter	Test-No.	Meas. range
Magnesium – Meas. range I (Mg I)	326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	326	10 – 50 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Insert filter **550 nm**.
2. Press "Null" (zero) key.
3. Insert sample cuvette and press "Extinktion" (extinction) key.  
Make a note of the display – **Ext. 1**
4. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

5. Insert sample cuvette again and press "Extinktion" (extinction) key. Make a note of the display – **Ext. 2**

## Calculation of the magnesium concentration:

Measuring range I:  $\text{mg/L Mg} = (\text{Ext.2} - \text{Ext.1} + 0.179) \times 27.16$ Measuring range II:  $\text{mg/L Mg} = (\text{Ext.2} - \text{Ext.1} + 0.042) \times 106.7$ 

Parameter	Meas. range
Magnesium – Meas. range I (Mg I)	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	10 – 50 mg/L

## Magnesium

Edition 98/04

## Evaluation

1. Insert program filter **550 nm**.
2. Press "Tests" key until display (see below) appears.
3. Control number must be **6** (Mg I) or **5** (Mg II).
4. Insert sample cuvette and press "Null" (zero) key.
5. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again and press "Ergebnis" (result) key.

If more than one magnesium sample is to be measured start the next evaluation for **measuring range I and II at point 4**.

Parameter	Display	Meas. range
Magnesium – Meas. range I (Mg I)	Mg I LCK 326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	Mg II LCK 326	10 – 50 mg/L



## Magnesium

Edition 98/04

### Evaluation

1. Insert sample cuvette.
2. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

3. Insert sample cuvette again.

Parameter	Meas. range
Magnesium – Meas. range I (Mg I)	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	10 – 50 mg/L

## Magnesium

Edition 98/04

### Evaluation

1. Check program control number:  
 \_\_ : **40 (CADAS 200)**  
 \_\_ : **40 (ISIS 6000)** ⇒ Select »CUVETTE TEST« mode.
2. Select test number (see below).
3. Control number must be **4**.
4. Insert sample cuvette and press green key.
5. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

6. Insert sample cuvette again and press green key.

*If more than one magnesium sample is to be measured start the next evaluation at point 4.*

Parameter	Test-No.	Meas. range
Magnesium – Meas. range I (Mg I)	326	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	326	10 – 50 mg/L

## Magnesium

Edition 98/04

### Evaluation

1. Select »TEST« mode.
2. Select symbol (see below).
3. Select symbol » > «.
4. Check factors and measuring wavelength in memory »Mem«.
5. Close cuvette compartment – without cuvette – and press »NULL“ (zero) key.
6. Insert sample cuvette and press »MESS“ (measure) key.
7. Remove sample cuvette. Close cuvette compartment – without cuvette – and press »NULL“ (zero) key.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

8. Insert sample cuvette again and press »MESS“ (measure) key.

*If more than one magnesium sample is to be measured start the next evaluation at point 5.*

Parameter	Symbol	Meas. range
Magnesium – Meas. range I (Mg I)	\$ 326 n	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	\$ 326 h	10 – 50 mg/L

## Magnesium

Edition 98/04

### Evaluation

1. Select »TEST« mode.
2. Select symbol (see below).
3. Control number must be **2 (Mg I)** or **6 (Mg II)**.
4. Close cuvette compartment – without cuvette – and press »NULL“ (zero) key.
5. Insert sample cuvette and press »MESS“ (measure) key.
6. Remove sample cuvette.

Pipette into the same cuvette

	Meas. range I	Meas. range II
Sample	2.0 mL	0.5 mL

Close cuvette and invert a few times. After **1 min** thoroughly clean the outside of the cuvette and evaluate.

7. Insert sample cuvette again and press »MESS“ (measure) key.

*If more than one magnesium sample is to be measured start the next evaluation at point 5.*

Parameter	Symbol	Meas. range
Magnesium – Meas. range I (Mg I)	326 n	0.5 – 10.0 mg/L
Magnesium – Meas. range II (Mg II)	326 h	10 – 50 mg/L