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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
Ringversuch: 1-2014  
Parameter: Aluminium  
Einheit: mg/l  
Gruppe: B  
Anzahl Werte: 40  

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Sollwert (Mittelwert nach Hampel): 0,08172  
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rel. Soll-Standardabw. [%]: 18,14  
Ausschlussgrenze unten: 0,0543  
Ausschlussgrenze oben: 0,1146

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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**Ringversuch: 1-2014**

**Parameter:** Ammonium  
**Einheit:** mg/l  
**Gruppe:** A  
**Anzahl Werte:** 47

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**Sollwert (Mittelwert nach Hampel):** 0,4387  
**Erweiterte Unsicherheit**: ± 0,00865 (± 1,97%)  
**Soll-Standardabweichung:** 0,02372  
**rel. Soll-Standardabwe.: [%]:** 5,41  
**Ausschlussgrenze unten:** 0,3925  
**Ausschlussgrenze oben:** 0,4875

*Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor $k=2$, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

**Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich**
**Ringversuch:** 1-2014  
**Parameter:** Eisen  
**Einheit:** mg/l  
**Gruppe:** B  
**Anzahl Werte:** 40

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**Sollwert (Mittelwert nach Hampel):** 0,8404  
**Erweiterte Unsicherheit**: ± 0,02028 (± 2,41%)  
**Soll-Standardabweichung**: 0,0513  
**rel. Soll-Standardabw. [%]**: 6,10  
**Ausschlussgrenze unten**: 0,7408  
**Ausschlussgrenze oben**: 0,9463

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
Hier ist ein Dokument aus der Wasserhygiene, das verschiedene Parameter und Ergebnisse eines Ringversuchs für Eisen darstellt. Der Sollwert für Eisen beträgt 0,6938 mg/l, wobei der ± 0,01617 (± 2,33%) als Erweiterte Unsicherheit angegeben wird. Die Ausschlussgrenze unten liegt bei 0,6162, während die Ausschlussgrenze oben bei 0,7759 liegt.

Die Tabellen zeigen die Laborwerte, Z(u)-Scores und ζ-Scores für verschiedene Proben. Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

*Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
### Ringversuch: 1-2014

**Parameter:** Elektr. Leitf. (25°C)  
**Einheit:** µS/cm  
**Gruppe:** B  
**Anzahl Werte:** 60

- **Sollwert (Mittelwert nach Hampel):** 2842
- **Erweiterte Unsicherheit*:** ± 12,42 (± 0,44%)  
- **Soll-Standardabweichung:** 38,49  
- **rel. Soll-Standardabw. [%]:** 1,35  
- **Ausschlussgrenze unten:** 2765,5  
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor $k=2$, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
### Ringversuch: 1-2014

#### Parameter: Elektr. Leitfähigkeit (25°C)

#### Einheit: µS/cm

#### Gruppe: C

#### Anzahl Werte: 64

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#### Erweiterte Unsicherheit*:
- 1983,1 µS/cm
- ± 6,662 (± 0,34%)

#### Ausschlussgrenze unten:
1940,7

#### Ausschlussgrenze oben:
2026

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

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Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
Ringversuch: 1-2014

Parameter: Färbung

Einheit: 1/m

Gruppe: A

Anzahl Werte: 46

Sollwert (Mittelwert nach Hampel): 0,6989

Erweiterte Unsicherheit*: ± 0,03925 (± 5,62%)

Soll-Standardabweichung: 0,1065

rel. Soll-Standardabw. [%]: 15,24

Ausschlussgrenze unten: 0,4998

Ausschlussgrenze oben: 0,9307

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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Sollwert (Mittelwert nach Hampel):

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## Erweiterte Unsicherheit:
Erweiterte Unsicherheit*: ± 0,04771 (± 2,70%)

## Sollwert-Standardabweichung:
0,1294

## rel. Soll-Standardabw. [%]:
7,34

## Ausschlussgrenze unten:
1,514

## Ausschlussgrenze oben:
2,033

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
Ringversuch: 1-2014  
Parameter: Färbung  
Einheit: 1/m  
Gruppe: C  
Anzahl Werte: 47

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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
Ringversuch: 1-2014
Parameter: Kupfer
Einheit: mg/l
Gruppe: B
Anzahl Werte: 33

Sollwert (Mittelwert nach Hampel): 1,191
Erweiterte Unsicherheit*: ± 0,02655 (± 2,23%)
Soll-Standardabweichung: 0,06102
rel. Soll-Standardabw. [%]: 5,12
Ausschlussgrenze unten: 1,072
Ausschlussgrenze oben: 1,316

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
### Ringversuch: 1-2014

**Parameter:** Mangan  
**Einheit:** mg/l  
**Gruppe:** A  
**Anzahl Werte:** 34

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**Erweiterte Unsicherheit*: ± 0.00171 (± 2.43%)**

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**rel. Soll-Standardabw. [%]:** 5.66  
**Ausschlussgrenze unten:** 0.06273  
**Ausschlussgrenze oben:** 0.07871

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
### Ringversuch: Mangan

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
**Ringversuch:** 1-2014

**Parameter:** Nitrat

**Einheit:** mg/l

**Gruppe:** A

**Anzahl Werte:** 44

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**Sollwert (Mittelwert nach Hampel):** 7,941

**Erweiterte Unsicherheit:± 0,2119 (± 2,67%)**

**Soll-Standardabweichung:** 0,5623

**rel. Soll-Standardabw. [%]:** 7,08

**Ausschlussgrenze unten:** 6,854

**Ausschlussgrenze oben:** 9,109

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
### Ringversuch: 1-2014

**Parameter:** Nitrat  
**Einheit:** mg/l  
**Gruppe:** B  
**Anzahl Werte:** 37

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**Sollwert (Mittelwert nach Hampel):** 17,97  
**Erweiterte Unsicherheit*: ± 0,3548 (± 1,97%)  
**Soll-Standardabweichung:** 0,8984  
**rel. Soll-Standardabw. [%]:** 5,00  
**Ausschlussgrenze unten:** 16,21  
**Ausschlussgrenze oben:** 19,81

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
**Ringversuch:** 1-2014  
**Parameter:** Nitrat  
**Einheit:** mg/l  
**Gruppe:** C  
**Anzahl Werte:** 38  

**Sollwert (Mittelwert nach Hampel):** 25,86  
**Erweiterte Unsicherheit:** ± 0,4346 (± 1,68%)  
**Soll-Standardabweichung:** 1,293  
**rel. Soll-Standardabw. [%]:** 5,00  
**Ausschlussgrenze unten:** 23,34  
**Ausschlussgrenze oben:** 28,52  

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
### Ringversuch: 1-2014

**Parameter:** Nitrit  
**Einheit:** mg/l  
**Gruppe:** A  

Anzahl Werte: 44

#### Sollwert (Mittelwert nach Hampel):

- **Sollwert:** 0,2536  
- **Soll-Standardabweichung:** ± 0,00536 (± 2,11%)

#### rel. Soll-Standardabw. [%]:

0,01423

#### Ausschlussgrenze unten:

0,2259

#### Ausschlussgrenze oben:

0,2829

#### Erweiterte Unsicherheit*:

0,2829  
0,2259  
0,01423

#### ζ-Score Code-Nr.

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
Ringversuch: 1-2014
Parameter: Nitrit
Einheit: mg/l
Gruppe: B
Anzahl Werte: 37

Sollwert (Mittelwert nach Hampel): 0,08079
Erweiterte Unsicherheit*: ± 0,00139 (± 1,72%)
Soll-Standardabweichung: 0,00404
rel. Soll-Standardabw. [%]: 5,00
Ausschlussgrenze unten: 0,0729
Ausschlussgrenze oben: 0,08908

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*Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich*

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*
### Ringversuch: 1-2014

**Parameter:** Nitrit  
**Einheit:** mg/l  
**Gruppe:** C  
**Anzahl Werte:** 42

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**Sollwert (Mittelwert nach Hampel):** 0,1399  
**Erweiterte Unsicherheit*: ± 0,0039 (± 2,79%)  
**Soll-Standardabweichung:** 0,01012  
**rel. Soll-Standardabw. [%]:** 7,23  
**Ausschlussgrenze unten:** 0,1204  
**Ausschlussgrenze oben:** 0,161

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
### Ringversuch: 1-2014

**Parameter:** Oxidierbarkeit  
**Einheit:** mg/l O2  
**Gruppe:** A  
**Anzahl Werte:** 51

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**Sollwert (Mittelwert nach Hampel):** 2,608  
**Erweiterte Unsicherheit*: ± 0,09759 (± 3,74%)  
**Soll-Standardabweichung:** 0,2788  
**rel. Soll-Standardabw. [%]:** 10,69  
**Ausschlussgrenze unten:** 2,077  
**Ausschlussgrenze oben:** 3,199

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
**Ringversuch:** 1-2014  
**Parameter:** Oxidierbarkeit  
**Einheit:** mg/l O2  
**Gruppe:** B  
**Anzahl Werte:** 50

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**Sollwert (Mittelwert nach Hampel):** 4,137  
**Erweiterte Unsicherheit:** ± 0,102 (± 2,47%)  
**Soll-Standardabweichung:** 0,2886  
**rel. Soll-Standardabw. [%]:** 6,98  
**Ausschlussgrenze unten:** 3,579  
**Ausschlussgrenze oben:** 4,736

*Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*

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**Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich**
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
Ringversuch: 1-2014  
Parameter: pH-Wert  
Einheit: B  
Gruppe:  
Anzahl Werte: 65

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*S: die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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### Erweiterte Unsicherheit*:
- Erweiterungsfaktor: k=2
- Erweiterungsunsicherheit: ±0,131 (±3,31%)
- Erweiterte Unsicherheit: ±0,2917
- Ausschlussgrenze unten: 3,395
- Ausschlussgrenze oben: 4,565

* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).
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Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich
### Ringversuch: 1-2014

**Parameter:** Trübung  
**Einheit:** NTU  
**Gruppe:** B  
**Anzahl Werte:** 47

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**Sollwert (Mittelwert nach Hampel):** 1,657  
**Erweiterte Unsicherheit**: ± 0,06857 (± 4,14%)  
**Soll-Standardabweichung:** 0,188  
**rel. Soll-Standardabw. [%]:** 11,35  
**Ausschlussgrenze unten:** 1,299  
**Ausschlussgrenze oben:** 2,056

*Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*
### Ringversuch: 1-2014

#### Parameter: Trübung

**Einheit:** NTU  
**Gruppe:** C

**Anzahl Werte:** 48

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* Die angegebene Unsicherheit des Sollwertes entspricht der erweiterten Unsicherheit mit einem Erweiterungsfaktor k=2, entsprechend einem Vertrauensniveau von ca. 95% (Berechnung nach ISO 13528).*

---

Niedersächsisches Landesgesundheitsamt - Fachbereich Wasserhygiene, Lüchtenburger Weg 24, 26603 Aurich