

sensION™+ Meters and probes

Electrochemistry



Hach sensION+, an all-in-one system with guided menu navigation, makes general electrochemistry testing fast and simple. Each system is designed to be used in a wide variety of applications and comes complete with everything you need to start testing.



Features and Benefits

Kit supplied complete with all accessories

All kits are supplied complete with meter, probe, carrying case and all required accessories, making it simple to grab the kit and begin testing immediately.

Simple and Fast Measurements

A guided navigation menu allows you to follow simple prompts to set up your measurements, reducing the time necessary to start testing and improving the accuracy of measurements.

Available for a Wide Variety of Applications

The extensive number of probes dedicated for sensION+ allows you to choose the most adequate measuring system configuration for your application and testing environment.



sensION+ Portable Meters



Hach sensION+ portable meters are compact, rugged lightweight, and ideally suited for field measurements.

- Waterproof IP67, shock resistant housing
- Large backlit graphic screen with icon navigation
- Simultaneous display of various parameters
- Combined electrodes with built-in temperature probe and watertight connector
- Carrying case designed to be a portable laboratory!

Parameters	PH1 Portable pH-Meter	MM110 Portable multimeter simultaneous pH/Redox	EC5 Portable Conductivity meter	DO6 Portable Dissolved Oxygen meter	MM150 Portable multimeter for portable multiprobes
Temperature	■	■	■	■	■
pH	■	■			■
Conductivity			■		■
Salinity			■		■
TDS			■		■
Dissolved Oxygen				■	
ORP/Redox	■	■			■
Product number (meter alone)	LPV2500.98.0002	LPV2600.98.0002	LPV3500.98.0002	LPV4500.98.0002	LPV4000.98.0002

sensION+ portable meters, technical specifications

Measuring ranges

pH: -2.00 to 19.99

mV: +/- 1400

Conductivity: 0.01 μ S/cm to 500 mS/cm

TDS: 0 mg/l to 500 g/l

Salinity: 0 to 50 g/l NaCl

Dissolved Oxygen

Saturation: 0 to 250 % (25°C)

Concentration 0 to 22 mg/l (25°C)

Temperature: -20 to 150°C (0 to 50°C for DO)

Temperature compensation

Automatic thanks to the Pt 1000 built-in in the probes.

Temperature correction for conductivity

Linear correction factor from 0 to 9,99 %/°C (default value 2 %)

Reference temperature 20 or 25°C

TDS conversion factor

0 to 4,44 (default value 0,64)

Measuring mode

Upon stabilisation or continuous

Calibration

pH

1,2 or 3 calibration points

Automatic recognition of buffer solutions

pH 2,00/4,01 /7,00 /9,21 and 10,01 at 25°C

Manual calibration using the buffer solution of your choice

Restore factory calibration option

mV

Automatic recognition of a standard solution 220 mV at 25°C

Manual calibration using the standard solution of your choice

Restore factory calibration option

Conductivity

1,2 or 3 calibration points

Stored calibration solutions 147 μ S/cm, 1413

μ S/cm, 12,88 mS/cm and 111,8 mS/cm at 25°C

Manual calibration using the standard solution of your choice

Restore factory calibration option

Dissolved Oxygen

1 or 2 calibration points

Manual calibration at 0 and 100 % saturation

Temperature adjustment

Drift correction of the temperature probe at 25° and 85°C

Display

LCD with backlight

Simultaneous display of several parameters

Icon navigation

Power supply

3 x AA batteries, battery life depends on model,

above 500 hours for pH-meter

Automatic switch off after 5 min. (this function can be disabled)

Connection

Watertight electrode connector MP-5 (5 contacts) for PH1 / EC5 / DO6

MP-8 (8 contacts) for MM110 and MM150

Meter housing features

ABS, waterproof IP67

Dimensions 186 x 73 x 38mm

Weight 300 g

Working environment

Working T°: 0 to 50°C

Storage T°: -15 to 65°C

Relative humidity rate <80%

Regulatory Info

Low voltage and EMC

Conformity: CE, UNE-EN 61010-1 and UNE-EN 61326-1

sensION+ Benchtop Meters

Hach sensION+ Benchtop Meters are designed to be 'all-in-one' working stations, ready for a wide variety of applications, and come complete with integrated electrode holder and magnetic stirrer.

- Housing and keyboard splashproof IP42
- Large graphic display with backlight
- Electrode parking positions
- Colour coded calibration flasks with magnetic rod
- Electrode holder fitted with a safe cable fastener
- Built-in magnetic stirrer controlled from the instrument



Parameters	PH3 Benshtop pH-meter	PH31 GLP Benchtop pH-meter	EC7 Benchtop conductivity meter	EC71 GPL Benchtop conductivity meter	MM340 GLP pH-meter ionmeter	MM374 GLP Benchtop multimeter
Temperature	■	■	■	■	■	■
pH	■	■			■	■
Conductivity			■	■		■
Resistivity			■	■		
Salinity			■			
TDS				■		■
ORP/Redox	■	■				
Nitrates					■	■
Fluoride					■	■
Sodium					■	■
Chloride					■	■
Ammonium					■	■
Ammonia					■	■
Specifications						
N° of measuring channels	1	1	1	1	2	2
GLP functions		■		■	■	■
PC or printer output		■		■	■	■
Product number	LPV2000.98.0002	LPV2100.98.0002	LPV3010.98.0002	LPV3110.98.0002	LPV2200.98.0002	LPV4110.98.0002

sensION+ benchtop meters, technical specifications

Measuring ranges

pH: -2.00 to 19.99

mV: +/- 2000

Conductivity: 0,01/0.001*µS/cm up to 500/1000** ms/cm

(*with Constant=0,1 cm⁻¹,

**with Constant=10 cm⁻¹)

Resistivity: 0 to 100 MOhms

TDS: 0 mg/l to 500 g/l

Salinity: 5,85 mg/l to 311,1g/l NaCl

ISE: 10⁻⁵ M to 10⁻¹ M

Temperature: -20 to 150°C

Temperature compensation

Automatic with Pt 1000 or 10 kOhms temperature probe

Manual if no T° sensor connected.

Temperature correction for conductivity

Linear correction factor from 0 to 9,99%/°C (default value 2%)

Correction factor for natural waters following UNE

EN 27888 - Except EC7

Reference temperature 20 or 25°C

TDS conversion factor

0 to 4,44 (default value 0,64)

Calibration

Adjustable calibration alarm

Automatic rejection of electrodes in poor condition

pH

1,2 or 3 calibration points

Automatic recognition of buffers among following series:

● pH 2,00/4,01/7,00/9,21 and 10,01 at 25°C)

● pH 1,679/4,006/6,865/7,00/9,18/10,012/12,454 at

25°C - Except PH3

Series of 3 free selectable buffer values - Except PH3

Manual calibration using any value - Except PH3

Manual entry of calibration results - Except PH3

Restore factory calibration option

mV

Automatic recognition of a standard 220 mV at 25°C

Manual calibration using any value - Except PH3

Manual entry of calibration values - Except PH3

Restore factory calibration option

- Except PH3

Conductivity

1, 2 or 3 calibration points

Selection of standards in the following series

● Molar 147 µS/cm, 1413 µS/cm, 12,88 mS/cm,

111,8 mS/cm at 25°C

● Demal 1049 µS/cm, 12,85 mS/cm, 111,31 mS/cm

at 25°C - Except EC7

● NaCl 1014,9 µS/cm for salinity

Manual calibration using any value - Except EC7

Manual entry of the cell constant

Restore factory calibration option

Ionmetry (ISE)

2 to 5 calibration points

Series of 5 user's selectable calibration solutions

Storage of 4 calibration curves

Temperature adjustment

Drift correction of the temperature probe at 25° and 85°C - Except PH3 and EC7

Measuring mode

Upon stabilisation, continuous or by time - Except PH3 and EC7

2 independent measuring channels for MM340 and MM374

GLP functions - Except PH3 and EC7

340 results stored for each channel and 9 calibration results

Date/Time, sample ID, user ID

Connections

Combined/indicator electrode: BNC

Reference electrode: banana 5 mm

Conductivity cell: 8 contact telephone plug

T°: 5 mm banana or 4 contact telephone plug

Data transfer - Except PH3 and EC7

RS232 output for PC or printer

RS232 - USB adapter as option

Display

LCD graphic with backlight

Menu available in French, English, Spanish, German, Portuguese

Power supply

Mains adapter 100-240 VAC (0,4 A/47-63 Hz)

sensION+ Probes for portable meters



Specifications	Combined pH General use	Combined pH waste water	Combined pH Low conductivity high temperature	Combined pH puncture type	Combined pH puncture type	Combined pH puncture type
Model	5050T	5051T	5052T	5033	5053T	5054T
Special feature	Gel	With working protector open junction	With working protector PTFE junction	Economical	Built-in T° probe 2 junctions	Removable steel knife, Built-in T°
Measuring range	0 to 14 pH	2 to 14 pH	0 to 14 pH	2 to 14 pH	2 to 14 pH	2 to 14 pH
Temperature range	0 to 80 °C	0 to 80 °C	0 to 100 °C	0 to 60 °C	0 to 60 °C	0 to 60 °C
Temperature probe	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000
Dimensions (under head)	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm
Sensitive component	Glass	Glass	Glass	Glass	Glass	Glass
Body material	Polycarbonate	Glass	Glass	POM	Stainless steel	Stainless steel
Filling	Gel	Solid	Gel	Solid	Solid	Solid
Connector	MP-5	MP-5	MP-5	MP-5	MP-5	MP-5
Cable length	1 m	1 m	1 m	1 m	1 m	1 m
Product number	LZW5050T.97.002	LZW5051T.97.002	LZW5052T.97.002	CRI5033.99	CRI5053T.99	CRI5054TC.99

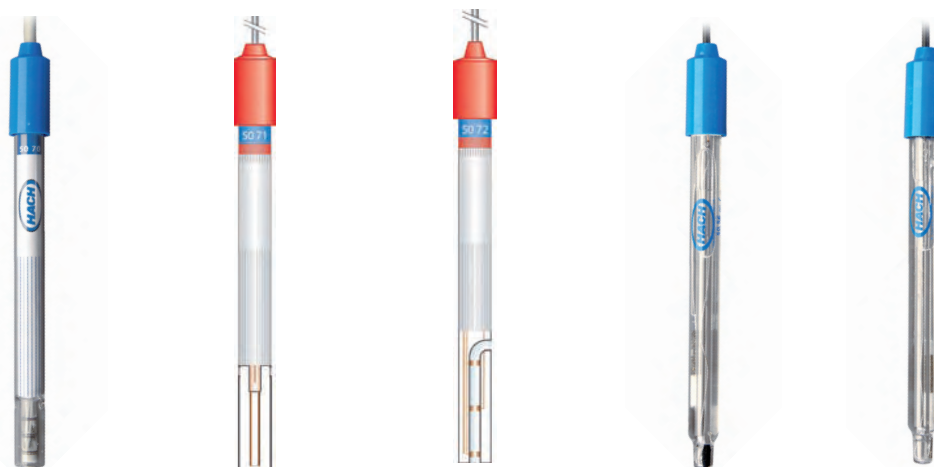


Specifications	Conductivity General use	Conductivity Difficult samples	Multi**	Multi*	Multi**	ORP / Redox	Dissolved Oxygen DO
Model	5060	5062	5048	5045	5059	5055	5120
Special feature	-	Rugged titanium body	pH/Conductivity/ ORP	pH/ORP	pH/Conductivity	Gel	-
Measuring range	0,2 µS/cm up to 200 mS/cm	5 µS/cm up to 50 mS/cm	0 to 14 pH 25-200 mS/cm +/- 2000 mV	0 to 14 pH +/- 2000 mV	0 to 14 pH 5 µS/cm to 30 mS/cm +/- 2000 mV	+/- 2000 mV	0,03 mg/l up to saturation
Temperature range	0 to 80 °C	0 to 80 °C	0 to 80 °C	0 to 80 °C	0 to 80 °C	0 to 80 °C	0 to 60 °C
Temperature probe	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000	-	NTC
Dimensions (under head)	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 85 mm	12 mm x 120 mm
Sensitive component	Platinum	Platinum	pH: Glass Cond & Redox: Platinum	pH: Glass Redox: Platinum	pH: Glass Cond: Titanium	Platinum wire	Polarographic Silicone /PTFE membrane
Body material	Polycarbonate	Titanium	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	PPS
Filling	-	-	Gel	Gel	Gel	Gel	-
Connector	MP-5	MP-5	MP-8	MP-8	MP-8	MP-5	MP-5
Cable length	1 m	1 m	1 m	1 m	1 m	1 m	3 m
Product number	LZW5060.97.0002	LZW5062.97.0002	LZW5048.97.0002	LZW5045.97.0002	LZW5059.97.0002	LZW5055.97.0002	LZW5120.97.0002

senzION+ Probes for benchtop meters



Specifications	Combined pH General use	Combined pH All applications	Combined pH Waste water Difficult samples	Combined pH for low ionic strength Difficult samples	Combined pH Samples with HF
Model	5010T	5014T	5011T	5021T	5026T
Special feature	Gel	2 ceramic junctions	Open junction	Reverse sleeve junction	Samples with HF up to 1 g/l at pH>3
Measuring range	0 to 14 pH	2 to 14 pH	2 to 14 pH	0 to 14 pH	1 to 11 pH
Temperature range	0 to 80 °C	-10 to 100 °C	0 to 80 °C	0 to 60 °C	0 to 80 °C
Temperature probe	Pt1000	Pt1000	Pt1000	Pt1000	-
Dimensions (under head)	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm
Sensitive component	Glass	Glass	Glass	Glass	Glass
Body material	Polycarbonate	Glass	Glass	Glass	Glass
Filling	Gel	KCl 3M (liquid)	Solid polymer	KCl 3M (liquid)	KCl 3M (liquid)
Connector	BNC + Banana	BNC + Banana	BNC + Banana	BNC + Banana	BNC
Cable length	1 m	1 m	1 m	1 m	1 m
Product number	LZW5010T.97.002	LZW5014T.97.002	LZW5011T.97.002	LZW5021T.97.002	CRI5026T.99



Specifications	Conductivity General use	Conductivity Low conductivity	Conductivity High conductivity	ORP/Redox General use	ORP/Redox All applications
Model	5070	5071	5072	5056	5057
Special feature	-	Constant 0,1 cm ⁻¹	Constant 10 cm ⁻¹	Gel	Liquid filling
Measuring range	0,2 µS/cm to 200 mS/cm	0,05 µS/cm to 30 mS/cm	100 µS/cm to 500 mS/cm	+/- 2000 mV	+/- 2000 mV
Temperature range	0 to 80 °C	-30 to 85 °C	-30 to 85 °C	0 to 80 °C	0 to 80 °C
Temperature probe	Pt1000	Pt1000	Pt1000	-	-
Dimensions (under head)	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm	12 mm x 130 mm
Sensitive component	Platinum	Platinum	Platinum	Platinum	Platinum
Body material	Glass	Glass	Glass	Glass	Glass
Filling	-	-	-	Gel	KCl 3M Liquid
Connector	Telephone RJ45	Telephone RJ45	Telephone RJ45	BNC	BNC
Cable length	1 m	1 m	1 m	1 m	1 m
Product number	LZW5070.97.0002	CRI5071.99	CRI5072.99	LZW5056.97.0002	LZW5057.97.0002

sensION+ Ion Selective Electrodes (ISE) for benchtop instruments



Specifications	ISE Sodium 9650	ISE Chloride 9652	ISE Fluoride 9655	ISE Nitrates 9662
Model	9650	9652	9655	9662
Special feature	No internal electrolyte or spare membranes required maintenance free	No internal electrolyte or spare membranes required maintenance free	No internal electrolyte or spare membranes required maintenance free	No internal electrolyte or spare membranes required maintenance free
Measuring range	0,05 to 23000 mg/l Na ⁺	1 to 35000 mg/l Cl ⁻	0,02 to 20000 mg/l F ⁻	0,4 to 62000 mg/l NO ₃ ⁻
Temperature range	0 to 60 °C	5 to 50 °C	5 to 50 °C	5 to 40 °C
Dimensions (under head)	12 mm x 120 mm	12 mm x 120 mm	12 mm x 120 mm	12 mm x 120 mm
Sensitive component	Sodium selective glass membrane	Chloride selective solid membrane	Fluoride selective solid membrane	Nitrate selective polymer membrane
Body material	Glass	ABS	ABS	ABS
Filling	-	-	-	-
Connector	BNC	BNC	BNC	BNC
Cable length	1 m	1 m	1 m	1 m
Product number	LZW9650.97.0002	LZW9652.97.0002	LZW9655.97.0002	LZW9662.97.0002



Specifications	ISE Ammonium 9663	ISE Ammonia 5192700	Reference Electrode for ISE 5044
Model	9663		5044
Special feature	No internal electrolyte or spare membranes required maintenance free	Combined	Double junction reference electrode for ISE's, large ceramic diaphragm
Measuring range	0,9 to 1800 mg/l NH ₄ ⁺	0,6 to 17000 mg/l NH ₃	-
Temperature range	5 to 40 °C	0 to 50 °C	0 to 60 °C
Dimensions (under head)	12 mm x 120 mm	12 mm x 149 mm	12 mm x 120 mm
Sensitive component	Ammonium selective polymer membrane	Ammonia selective membrane	-
Body material	ABS	ABS	Glass
Filling	-	-	0.1M Lithium acetate
Connector	BNC	BNC	Banana
Cable length	1 m	1 m	1 m
Product number	LZW9663.97.0002	5192700	LZW5044.97.0002

sensION+ Benchtop series – Complete Kits

The kits available for the sensION+ benchtop series are designed as complete working stations. They come with the adequate sensor, an electrode holder, a magnetic stirrer, calibration flasks with magnetic stirrers and the calibration solutions, all accessories for a quick start up.

pH-Meters/Ionmeters

Sample type	Sensor included in the kit	Kit reference vs instrument		
		PH3 pH-Meter	PH31 GLP pH-Meter	MM340 pH/ionometer
General use	5010T	LPV2010T.98.002	LPV2110T.98.002	LPV2210T.98.002
All applications, Samples containing sulfides, reducing sugars, etc.	5014T	LPV2014T.98.002	LPV2114T.98.002	LPV2214T.98.002
Difficult samples, Food and beverage, contaminated samples	5011T	LPV2011T.98.002	LPV2111T.98.002	LPV2211T.98.002
Difficult media, viscous, emulsions etc.	5021T	LPV2021T.98.002	LPV2121T.98.002	LPV2221T.98.002

Conductivity meters

Sample type	Sensor included in the kit	Kit reference vs instrument model	
		EC7 Conductivity meter	EC71 GLP Conductivity meter
General use	5070	LPV3070.98.0002	LPV3170.98.0002

Multimeters

Sample type	Sensor included in the kit	Kit reference
		MM374 Multimeters
General use	5014 and 5070	LPV4140.98.0002



sensION+ portable series – Complete kits

The kits for the portable sensION+ series are designed to be portable working stations for field measurements. They include the adequate sensors, the carrying case with the calibration and sample measuring tubes, and the necessary calibration solutions. Everything is at hand for efficient measurements!



pH/Redox meters – Kits based on portable pH-Meter PH1

Sample type	Sensor included in the kit	Instrument included in the kit	Kit reference
General use	5050T	PH1	LPV2550T.98.002
Waste water	5051T	PH1	LPV2551T.98.002
Low conductivity	5052T	PH1	LPV2552T.98.002
Redox measurement kit - General use	5055	PH1	LPV2555.98.0002

Conductivity meters – Kits based on portable conductivity meter EC5

Sample type	Sensor included in the kit	Instrument included in the kit	Kit reference
General use	5060	EC5	LPV3560.98.0002
Contaminated/difficult samples	5062	EC5	LPV3562.98.0002

Multimeters – Kits based on portable multimeters MM110 or MM150

Sample type	Sensor included in the kit	Instrument included in the kit	Kit reference
General use	5045 pH/Redox/T°	MM110	LPV2645.98.0002
General use	5059 pH/Conductivity/T°	MM150	LPV4059.98.0002
General use	5048 pH/Redox/Conductivity/T°	MM150	LPV4048.98.0002

Dissolved Oxygen – Kit based on portable oxygen meter DO6

Sample type	Sensor included in the kit	Instrument included in the kit	Kit reference
General use	5120	DO6	LPV4551.98.0002

Electrode maintenance

LZW9509.99	KCl 3M electrolyte for electrode filling, 50 ml flask
LZW9510.99	KCl 3M electrolyte for electrode filling, 125 ml flask
LZW9500.99	KCl 3M electrolyte for electrode filling, 250 ml flask
LZW9901.99	0.1M lithium acetate electrolyte for ISE reference electrode, 125 ml
LZW5125.99	Membrane kit for DO electrode LZW5120
LZW9811.99	Electrolyte for sensION+ DO sensor, 25 ml

Accessories

LZW8201.99	Thermal printer, RS232, for benchtop sensION+
LZW8200.99	Matrix printer RS232, for sensION+ instruments
LZW9117.99	Thermal paper for printer LZW8201, pack of 5 rolls
LZW9000.99	Paper for printer LZW8200, pack of 10 rolls
LZW9001.99	Ink ribbon for printer LZW8200, pack of 3
LZW9319.99	Magnetic stirrer with electrode holder for sensION+ MM benchtop series
LZW9267.99	Holder and clamp for one sensor for sensION+ portable series
LZW9155.99	Holder and clamp for 3 sensION+ sensors
LZW9320.99	Holder for 1 sensor for sensION+ benchtop instruments
LZW9321.99	Holder for 3 sensors for sensION+ benchtop instruments
LZW9110.98	Printed calibration flasks 3x50 ml for benchtop pH-meters
LZW9111.99	Printed calibration flasks 3x50 ml for benchtop conductivity meters
LZW9137.98	Printed calibration tubes 3x10 ml for portable pH-meters
LZW9138.99	Printed calibration tubes 3x10 ml for portable conductivity meters
LZW5126.99	Protecting/calibration flask for DO 5120 electrode
LZW9161.99	PP protector for sensION+ electrode storage
LZW9162.99	PP protector for sensION+ measurements
LZW9118.99	Pyrex chamber for flow through measurements sensION+
LZW8997.99	ComLabo Easy software for GLP sensION+, CD, cable and USB adapter
LZW8999.99	ComLabo software for GLP sensION+, CD, cable and USB adapter
LZW9135.99	RS232 cable for benchtop sensION+
LZW9135USB.99	RS232 cable with USB adapter for benchtop sensION+



Calibration solutions

Certified pH standard solutions - Radiometer Analytical

	Packaging				
	50 ml	135 ml	250 ml	500 ml	1 liter
pH1.679 at 25°C IUPAC certified pH standard solution				S11M001	
pH4.005 at 25°C IUPAC certified pH standard solution				S11M002	
pH6.865 at 25°C IUPAC certified pH standard solution				S11M003	
pH7.000 at 25°C certified pH standard solution				S11M004	
pH7.413 at 25°C IUPAC certified pH standard solution				S11M005	
pH9.180 at 25°C IUPAC certified pH standard solution				S11M006	
pH10.012 at 25°C IUPAC certified pH standard solution				S11M007	
pH12.45 at 25°C IUPAC certified pH standard solution				S11M008	

Coloured pH buffer solutions

pH 4,01 buffer solution (red, NIST)	2283426			2283449	
pH 7,00 buffer solution (yellow, NIST)	2283526			2283549	
pH 10,01 buffer solution (blue, NIST)	2283626			2283649	

pH buffer solutions

pH 4,01 buffer solution with certificate		LZW9460.99	LZW9463.99		LZW9466.99
pH 7,00 buffer solution with certificate		LZW9461.98	LZW9464.98		LZW9467.98
pH 9,21 buffer solution with certificate		LZW9462.99	LZW9465.99		LZW9468.99

Certified conductivity standard solutions - Radiometer Analytical

KCl 1D certified conductivity standard 111.3 mS/cm at 25°C				S51M001	
KCl 0.1D certified conductivity standard 12.85 mS/cm at 25°C				S51M002	
KCl 0.01D certified conductivity standard 1408 µS/cm at 25°C				S51M003	
NaCl 0.05% certified conductivity standard 1015 µS/cm at 25°C				S51M004	
NaCl 25 certified conductivity standard 25.0 µS/cm at 25°C			S51M013		

Conductivity Molar calibration solutions

Conductivity calibration solution (KCl), 0,001M, 146,9 µS/cm	2974226	2974249			
Conductivity calibration solution (KCl), 0,01M, 1412 µS/cm	2974326	2974349			
Conductivity calibration solution (KCl), 0,1M, 12,89 mS/cm	2974426	2974449			
Conductivity calibration solution, 147 µS/cm, with certificate			LZW9701.99	LZW9700.99	
Conductivity calibration solution, 1413 µS/cm, with certificate			LZW9711.99	LZW9710.99	
Conductivity calibration solution, 12,88 mS/cm, with certificate			LZW9721.99	LZW9720.99	

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