Lab Sensors

InLab® Electrodes

- pH electrodes
- Conductivity probes
- Dissolved oxygen sensors
- ORP electrodes
- Ion-selective electrodes
- Reference electrodes
- Electrode cables and accessories
- Buffers, electrolytes and cleaning solutions

Simply Reliable

The Right Electrode Every Time

METTLER TOLEDO

INGOLD

Leading Process Analytics

INGOLD has been producing electrodes since 1948, a name that has been synonymous with the success of combined pH electrodes ever since. In 1986 INGOLD joined the METTLER TOLEDO group. The result is the development of the InLab® range of laboratory electrodes. InLab® is thus the product of over 60 years of experience in the manufacture of electrochemical sensors. And so the tradition continues with every METTLER TOLEDO sensor: "INGOLD inside"

Intelligent Sensor Management

The SevenCompact™ and SevenGo Duo™ meters incorporate Intelligent Sensor Management (ISM®). This ingenious functionality offers great advantages such as:

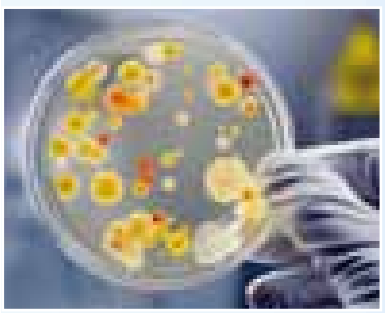
- After connection of ISM® sensor immediate transfer of current sensor calibration data and Sensor ID to meter.
- After calibration of ISM® sensor immediate transfer of calibration data from meter to sensor chip.
- When an ISM® sensor is connected, the initial calibration data in the sensor can be reviewed and transferred to a PC or printer.
- The last 5 calibration data stored in ISM® sensor including current calibration can be reviewed and transferred to a PC or printer.
- The maximum temperature that the ISM® sensor has been exposed to during measurement is monitored automatically and can be reviewed for valuation of electrode lifetime.

InLab® Glossary

Designation	Description
Type of membrane glass	
A41 glass	Particularly resistant to chemicals; suitable for high temperatures up to 130 °C; ideal for biological media.
HA glass	High alkali glass for use at high pH values and high temperatures; extremely low alkali errors; extremely robust membrane.
HF glass	Especially suitable for media containing hydrofluoric acid; up to a HF concentration of 1 g/L.
LoT glass	Low resistance glass for use at low temperatures (LoT = low temperature); also suitable for low ion concentrations (ultra-pure water); the glass of choice for thick membranes (puncture or surface electrodes).
U glass	Universal glass, tried & tested in standard applications; especially suitable for small membranes (microelectrodes).
Type of junction	
Click & Clear™	Thanks to the press mechanism, the sleeve junction is easy to open with combined perfectION™ ISE; quick cleaning and stable measurement values are ensured even in difficult samples.
Movable glass or PTFE sleeve	Movable sleeve junctions that can be easily and thoroughly cleaned.
Immovable glass sleeve	Fixed sleeve junctions for large contact area between reference electrolyte and measurement solution.
Ceramic	Conventional ceramic junctions for liquid electrolytes or in combination with SteadyForce™.
Ceramic ring	Large ring-shaped ceramic junctions for flat membranes.
Open junction	Open connections without junctions together with XEROLYT® polymer electrolyte.
Porous PTFE	Large contact surface polytetrafluoroethylene (PTFE) junctions.
Technologies, reference systems and reference electrolytes	
ARGENTHAL™	AgCl granulate-filled cartridge, which supplies the silver ions for the chemical reaction on the conducting wire. The silver ion trap stops the Ag^+ ions from discharging into the electrolyte solution, thus preventing contamination of the junction when using sulfides and proteins.
DPA-Gel	Gel electrolyte for electrodes with SteadyForce™.
driTEK	Reference system for ISFET electrodes.
Equithal®	Symmetrically structured conducting elements guarantee minimum response times and highly stable potentials when fluctuating temperatures are involved.
FRISCOLYT™	Special electrolyte for measurements at low temperatures and for media with organic components (e.g. oil, proteins, etc.). Recommended for storage of electrodes with XEROLYT™.
ISM® (Intelligent Sensor Management)	In sensors with ISM®, important information, such as calibration data, is stored on a chip directly in the sensor and automatically detected by the meter. Only with SevenCompact™ and SevenGo Duo™ meters.
SteadyForce™	Reference system in which the electrolyte is pressurized (3 bar) to ensure discharge of electrolyte even in viscous samples.
XEROLYT®	Solid polymer electrolyte in combination with open connections.
Shaft materials	
Stainless steel	316L (V4A) grade stainless steel.
Epoxy	Very strong plastic with excellent chemical and mechanical resistance. For very robust sensors.
PEEK	Polyetheretherketone: Highly temperature-resistant plastic with excellent chemical and mechanical resistance. For professional and heavy-duty sensors.
Polysulfone	Plastic with good chemical and mechanical resistance.
PPS	Polyphenylene sulfide: Partly crystalline, highly temperature-resistant plastic with excellent chemical and mechanical resistance. For robust dissolved oxygen sensors.

METTLER TOLEDO

Contents



Contents

Irrespective of the industry or application – we have the solution for you
METTLER TOLEDO sensors cover innumerable applications in chemical, pharmaceutical, food-processing, cosmetic, biological and many other laboratory and production facilities. Select the electrode that matches your requirements from the application table on page 6 or at **www.mt.com/electrode-guide**.

Inspirational Solutions

Electrochemical sensors are used in a wide variety of applications. METTLER TOLEDO offers a similarly wide variety of select products to help you find the ideal solution for your precise application. Our range focuses on the correct combination of high-quality materials, tried-and-tested technologies, and innovation. You will therefore find reliable and robust sensors for your routine measurements, as well as powerful specialist products for specific requirements.

For the selection and development of our products, it is important for us to know precisely the requirements of our customers. With this knowledge, combined with many years of experience in the manufacturing of electrochemical sensors, we can therefore proudly present a product range that continues to produce success. Customers with an extremely wide range of requirements have tested, and are inspired by, our sensors. See for yourself!

Solid foundation

The InLab® Routine Pro is a reliable workhorse for any lab. With EQUITHAL® technology and the ARGENTHAL™ reference system including silver ion trap, this sensor fulfills two fundamental requirements for optimum pH measurement. I can rely on fast response behavior and clean junctions. The InLab® Science with sleeve junction is used for more complex sample matrices, such as emulsions or biological media.

For more information,
see pages 8–9.

InLab® Science, InLab® Routine Pro

Well-equipped for challenging tasks

For my more technically challenging measurements, I need an electrode such as the InLab® Expert. With its highly resistant PEEK shaft and XEROLYT® polymer electrolyte with open junction, it is built to withstand even the toughest conditions. When the very highest performance is expected, I opt for the InLab® Power with the successful SteadyForce™ reference system.

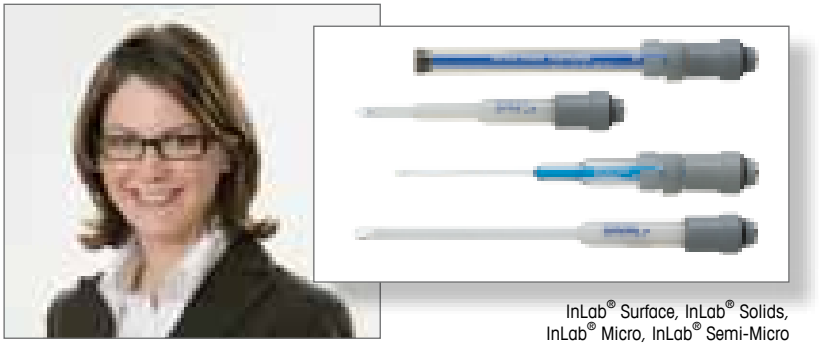
For more information,
see pages 10–11.

InLab® Expert, InLab® Power

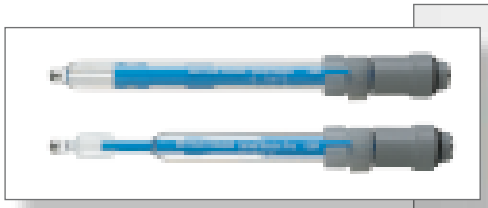
When form is a factor

I expect a pH electrode to be optimally equipped for my specific measurements. Electrodes such as the InLab® Solids for penetration measurements, or the InLab® Micro for the measurement of small quantities have the correct combination of form, membrane glass, and reference system, and fulfill these expectations perfectly.

For more information,
see pages 12–17.



InLab® Surface, InLab® Solids,
InLab® Micro, InLab® Semi-Micro

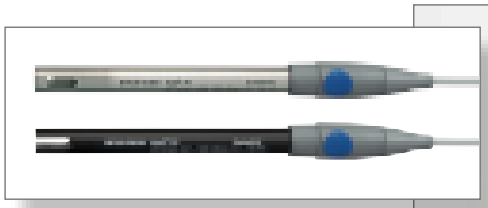


InLab® Redox, InLab® Redox Pro

Combined power for ORP/Redox measurement

When taking redox measurements in different samples, the right combination of precious metal and junction type is all-important. For my diverse applications I therefore opt for the InLab® Redox platinum electrode. Thanks to the InLab® Redox Pro with glass sleeve junction, blocked junctions in complex samples are no longer an issue.

For more information,
see pages 22–23.



InLab® 741, InLab® 731

Conductivity on all levels

Since my measurements in distilled water require absolute precision, I like to rely on the stainless steel InLab® 741, in which the actual cell constant has already been determined for me. For samples with higher conductivity, the InLab® 731 delivers the required results.

For more information,
see pages 24–25.

InLab® Expert Pro-ISM-IP67, InLab® 605-ISM,
InLab® 742-ISM

Equipped for mobile use

Mix-ups can happen easily when on the move. I'm glad that the pH electrode InLab® Expert-Pro-ISM-IP67 with "Intelligent Sensor Management" technology keeps track at the same time. For use in the factory, I require a robust and watertight sensor such as the InLab® 605 for dissolved oxygen, or the InLab® 742 for conductivity.

For more information,
see pages 26–27.

DX218-NH_4^+, perfectION™ comb F^-

Sensitive to ions

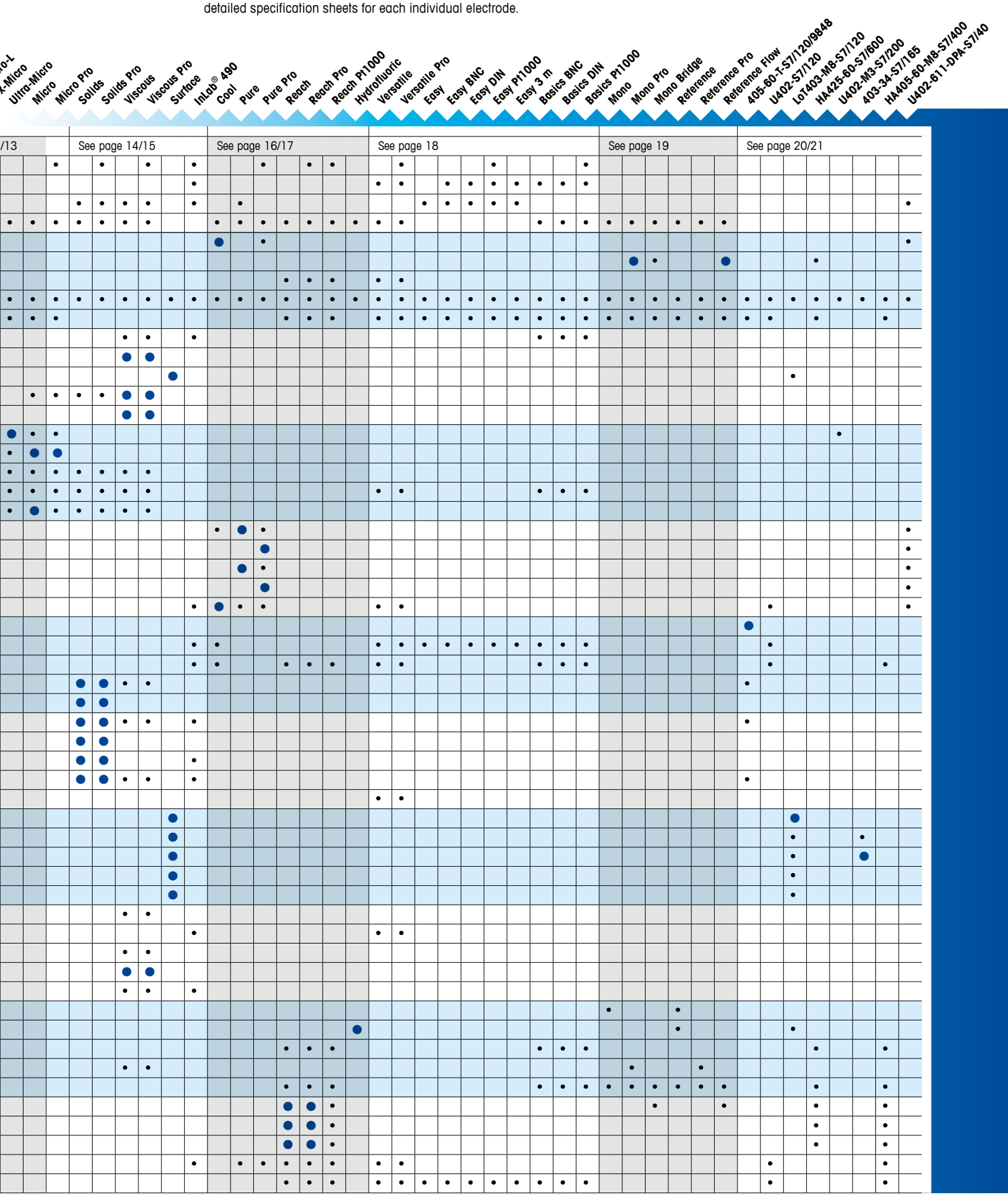
Thanks to the replaceable membrane module on the DX218-NH_4^+, I can replace my ammonium half-cell with another half-cell at any time. The perfectION™ comb F^-, with its integrated reference electrode and matching accessories, offers the complete solution for my fluoride measurement.

For more information,
see pages 28–31.

Which pH Electrode for Which Application?

	Electrode	Routine	Routine-L	Routine Pro	Routine Pt1000	Routine Pro-L	Science	Science Pro	Expert	Expert Pro	Expert DIN	Expert NTC30	Expert Pt1000	Expert 2 m	Power	Power Pro	Semi-Micro	Semi-Micro	Flex
		See page 8/9							See page 10/11								See page 12		
Electrode properties as selection criteria	Integrated temperature probe (ATC)			•	•	•		•		•	•	•	•	•		•			
	With cable (attached lead)					•				•	•			•					
	Low maintenance (electrolyte)								•	•	•	•	•	•	•	•	•		
	TRIS buffer compatibility	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Aqueous samples	Cold samples (< 5 °C)																		
	Hot samples (> 100 °C)														•	•			
	Waste water						•	•	●	●	•	•	•	•	•	•			
	With average conductivity	●	•	●	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Brine, highly saline solutions	●	•	●	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Cosmetic or viscous samples	Gels, soaps & shampoos	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	●		
	Hair tinting lotion																		
	Skin																		
	Cosmetic creams & mascara																•		
	Natural & synthetic resins																•		
Pharmaceutical & biological samples	Vials & NMR samples																		
	Serums & gastric juice, test tubes																•	•	●
	Medicinal formulations						•	•									●	•	•
	Proteinaceous media	•	•	•	•	•	●	●	•	•	•	•	•	•	•	•	•	•	•
	Enzyme solutions						•	•									•	•	•
Pure and ultrapure water	Soft surface water																		
	Sterile purified water																		
	Distilled water																		
	Water for injection																		
	Drinking water	•	•	•	•	•	•	•											
Beverages and dairy products	Milk & cream						•	•	●	●	•	•	•	•	•	•	•		
	Soft drinks & beer	•	•	•	•	•			●	●	•	•	•	•					
	Wine & vinegar	•	•	•	•	•			●	●	•	•	•	•					
	Butter, yogurt & ice-cream														•	•	•		
	Cheese																		
Food & agricultural products	Jam & preserves	•	•	•	•	•									•	•			
	Meat & fish																		
	Fruit & vegetables																		
	Dough & cocoa						•	•							•	•			
	Fertilizer & manure								●	●	•	•	•	•					
Surface measurements	Skin & leather																		
	Textiles & prints																		
	Paper & laminates																		
	Gelled agar																		
	Drop size samples																		
Paints, dyes & emulsions	Water-based paint						●	●	•	•	•	•	•	•	•	•	•		
	Suspended solids (e.g. soil)						•	•	●	●	•	•	•	•	•	•			
	Oily samples & emulsions						●	●	•	•	•	•	•	•	•	•	•		
	Colorants & dyes						•	•											
	Varnish & glue						•	•							●	●			
Chemicals & baths	Alcohols, aldehydes & ketones						●	●							•	•			
	HF bearing media (< 1 g/L)																		
	Photographic or galvanic baths	●	•	●	•	•	•	•											
	Hydrocarbons						•	•							●	●			
	Corrosive & hot acids/bases	●	•	●	•	•	•	•							•	•			
Large sample vessels	Pilot reactors																	•	
	Deep vessels																	•	•
	Tanks & barrels																		
	Boiler feed water	•	•	•	•	•			•	●	•	•	•	•					
	Aquariums	•	•	•	•	•			●	●	•	•	•	•					

Professional support
You will find a quick and easy interactive guide to help you select the right sensor for your application at **www.mt.com/electrode-guide**.
Here you will be able to access additional information such as photographs and download detailed specification sheets for each individual electrode.



Steady Companions

"The lead-off elements of InLab® glass electrodes consist of symmetrical conducting layers on the inner glass tube. Thanks to this equidistant design, the pH, reference and redox potentials stabilize rapidly and simultaneously. The EQUITHAL® technology by METTLER TOLEDO guarantees shortest response times despite large changes in temperature."

One prerequisite for accurate measurements is a clean junction. It forms the interface between the reference electrode and the measured medium. If it becomes contaminated, then any measurements will be invalidated by the increased number of diffusion potentials. METTLER TOLEDO offers maximum protection against such inaccuracies: in contrast to conventional electrodes, the electrolyte in InLab® electrodes with an ARGENTHAL™ reference system and silver-ion trap is guaranteed free of silver ions. Thus the possibility of contamination of the junction in sulfide or protein containing media or in TRIS-buffers is precluded.

InLab®	[1] Routine	Routine-L	[1] Routine Pro	Routine Pt1000	Routine Pro-L	Science	Science Pro
Order number	51343050	51343053	51343054	51343056	51343057	51343070	51343071
Order number ISM version			51344055				51344072
pH range	0...14	0...14	0...14	0...14	0...14	0...12	0...12
Temperature probe			NTC 30 kΩ	Pt1000	Pt1000		NTC 30 kΩ
Type of membrane glass	HA	HA	HA	HA	HA	A41	A41
Membrane resistance (25 °C)	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ
Cable and connections	S7	S7	MultiPin™	MultiPin™	1.2 m; DIN 19262/ 4 mm banana gold-plated	S7	MultiPin™
Shaft length	120 mm	170 mm	120 mm	120 mm	170 mm	120 mm	170 mm
Type of junction	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Movable glass sleeve	Movable glass sleeve
Bridge electrolyte							3 mol/L KCl
[1] **Cable kit**	51343051 Set InLab® Routine with DIN cable 52300001 51343052 Set InLab® Routine with BNC cable 52300004 51343055 Set InLab® Routine Pro with BNC/RCA (Cinch) cable 52300009 30014095 Set InLab® Routine Pro-ISM with BNC/RCA (Cinch) cable 51344291						
Common specifications	Type of electrode: pH-combination / Shaft material: Glass / Reference electrolyte: 3 mol/L KCl / Temperature range: 0...100 °C Shaft diameter: 12 mm / Reference system: ARGENTHAL™ with silver-ion trap / Storage: 3 mol/L KCl						

Defying the Laws of Physics

"The InLab® Power is simply brilliant: The SteadyForce™ reference system is under over-pressure, guaranteeing electrolyte discharge. The constant but controlled gradual discharge of electrolyte by the ceramic junction ensures extremely reliable and reproducible results. At the same time, there is no need to worry about the junction becoming contaminated … the SteadyForce™ system always ensures a connection to the measurement medium! Thanks to InLab® Power you can just concentrate on measuring."

Microporous ceramic junctions can become contaminated in critical media. However, InLab® electrodes with solid XEROLYT® polymer electrolyte completely dispense with the need for a junction. With the InLab® Expert, the reference electrode is in direct contact with the measured medium via an open connection. If there is no junction, then there is also no possibility of contamination or blockage! Ideal for critical samples such as suspensions or samples of unknown composition, e.g. waste water.
Furthermore, the PEEK shaft is so chemically and mechanically robust that these electrodes perform reliably under the toughest conditions. One of METTLER TOLEDO's most successful inventions.

InLab®	Expert	[1] Expert Pro	Expert DIN	Expert NTC30	Expert Pt1000	Power	Power Pro
Order number	51343100	51343101	51343103	51343104	51343105	51343110	51343111
Order number ISM version		30014096					51344211
pH range	0...14	0...14	0...14	0...14	0...14	0...12	0...12
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...130 °C	0...130 °C
Temperature probe		NTC 30 kΩ	Pt1000	NTC 30 kΩ	Pt1000		NTC 30 kΩ
Type of membrane glass	U	U	U	U	U	A41	A41
Membrane resistance (25 °C)	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ
Type of junction	Open junction	Open junction	Open junction	Open junction	Open junction	Ceramic	Ceramic
Reference system	ARGENTHAL™	ARGENTHAL™	ARGENTHAL™	ARGENTHAL™	ARGENTHAL™	SteadyForce™	SteadyForce™
Reference electrolyte	XEROLYT® Polymer	XEROLYT® Polymer	XEROLYT® Polymer	XEROLYT® Polymer	XEROLYT® Polymer	DPA-Gel	DPA-Gel
Cable and connections	S7	1.2 m cable; BNC/RCA (Cinch)	1.2 m cable; DIN 19262/4mm	MultiPin™	MultiPin™	S7	MultiPin™
Shaft material	PEEK	PEEK	PEEK	PEEK	PEEK	Glass	Glass
Shaft length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm	170 mm
Storage	FRISCOLYT-B®	FRISCOLYT-B®	FRISCOLYT-B®	FRISCOLYT-B®	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl
[1] **InLab® Expert 2 m**	The InLab® Expert Pro is also available with a 2 m cable: Order number 51343102						
Common specifications	Type of electrode: pH-combination / Shaft diameter: 12 mm						

Through Thick and Thin

		Minimum sample volume in this specific container type			
		pH diameter 3mm			Conductivity diameter 4mm
Container type	**Typical sample size**	**InLab® Ultra-Micro**	**InLab® Micro**	**U402-M3-S7/200** (page 21)	**InLab® 751-4mm** (page 25)
Small test tubes	> 2 mL	100 µL	200 µL	200 µL	500 µL
LiteTouch Tubes reaction vials	1.5 – 1.7 mL	25 µL	65 µL	65 µL	300 µL
Sample tubes	0.5 mL	25 µL	65 µL	65 µL	300 µL
NMR tubes	400 – 800 µL	20 µL	45 µL	45 µL	300 µL
96 well plates	200 – 300 µL	20 µL	45 µL	45 µL	150 µL
PCR plates	200 – 300 µL	20 µL	45 µL	45 µL	150 µL
Sequencing vials	5 – 15 µL	15 µL	–	–	–

"The InLab® Semi-Micro contains the latest in polymer electrolytes: XEROLYT® EXTRA, which is characterized by high signal stability, a very short response time and high chemical resistance. Service and operation could not be simpler thanks to the polymer electrolyte and the open reference junction. It is the perfect semi-micro electrode for biological media and TRIS buffers, as the question of blockages never arises."

All micro and semi-micro electrodes are equipped with ARGENTHAL™ and a silver-ion trap: This ensures that the electrolyte is silver-ion-free and there is no danger of the junction becoming blocked by sulfides or proteins.
The InLab® Micro Pro with integrated temperature sensor supports automatic temperature compensation. With its shaft diameter of only 5 mm it is a little technological marvel.

ISM

InLab®	Semi-Micro	Semi-Micro-L	Flex-Micro	Ultra-Micro	Micro	Micro Pro
Order number	51343165	51343161	51343164	51343163	51343160	51343162
Order number ISM version						51344163
pH range	0...12	0...14	0...14	1...11	0...14	0...14
Temperature range	0...100 °C	0...100 °C	0...80 °C	0...80 °C	0...80 °C	0...100 °C
Temperature probe						NTC 30 kΩ
Type of membrane glass	A41	U	U	LoT	U	U
Membrane resistance (25 °C)	< 300 MΩ	< 300 MΩ	< 600 MΩ	< 700 MΩ	< 1000 MΩ	< 300 MΩ
Type of junction	Open junction	Ceramic	Porous PTFE	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	XEROLYT®EXTRA Polymer	3 mol/L KCl	3 mol/L KCl	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Cable and connections	S7	S7	1.0 m Kabel; BNC	S7	S7	MultiPin™
Shaft material	Glass	Glass	Epoxy	Glass	Glass	Glass
Shaft length	100 mm	230 mm	180 mm	40 mm	60 mm	130 mm
Shaft diameter	6 mm	6 mm	6 mm	3 mm	3 mm	5 mm
Storage	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl
Common specifications	Type of electrode: pH-combination					

Your Application in Mind

METTLER TOLEDO offers pH electrodes for all imaginable applications. The InLab® Solids is specially designed to cope with solid samples such as sausages or cheese. And if automatic temperature compensation is required, then the InLab® Solids Pro is the solution. The InLab® Surface has been designed to carry out pH measurements on surfaces, such as paper or skin. It is also ideal for measuring drop-sized samples on glass substrates.

The InLab® Viscous has been especially developed for viscous and highly glutinous samples. The SteadyForce™ reference system guarantees the discharge of electrolyte, even with the most glutinous and fatty of samples, e.g. cosmetics, paints or resins. The form has been chosen so that as little of the sample as possible adheres to the shaft and to facilitate cleaning. The result is a problem solver for one of the most difficult sample types, the highly viscous materials.

InLab®	Solids	Solids Pro	Viscous	Viscous Pro	490	Surface
Order number	51343153	51343154	51343150	51343151	51302305	51343157
Order number ISM version		51344155				
pH range	1...11	1...11	0...14	0…14	0...14	1...11
Temperature range	0...80 °C	0...80 °C	0...130 °C	0…130 °C	0...60 °C	0...50 °C
Temperature probe		NTC 30 kΩ		NTC 30 kΩ	NTC 30 kΩ	
Type of membrane glass	LoT	LoT	HA	HA	ISFET	LoT
Membrane resistance (25 °C)	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ		< 800 MΩ
Type of junction	Open junction	Open junction	Ceramic	Ceramic	Porous PTFE	Ceramic ring
Reference system	ARGENTHAL™	ARGENTHAL™	SteadyForce™	SteadyForce™	driTEK	Ag/AgCl
Reference electrolyte	XEROLYT®EXTRA polymer	XEROLYT®EXTRA polymer	FRISCOLYT-C®	FRISCOLYT-C®	Gel	3 mol/L KCl AgCl saturated
Cable and connections	S7	MultiPin™	S7	MultiPin™	1.0 m cable; Mini-DIN	S7
Shaft material	Glass	Glass	Glass	Glass	ABS	Polysulfone
Shaft length	25 mm	25 mm	40 mm	40 mm	160 mm	110 mm
Shaft diameter	6 mm	6 mm	6 mm	6 mm	10 mm	12 mm
Storage	FRISCOLYT-B®	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	dry	3 mol/L KCl AgCl saturated
Common specifications	Type of electrode: pH-combination					

Nothing is Impossible

These InLab® electrodes are suitable for deep containers, cold and pure samples, as well as samples containing hydrofluoric acid. The InLab® Pure has been consciously designed with maximum robustness so that it is also suitable for use in the field or in the factory.

The various lengths of the InLab® Reach, with or without integrated temperature probe, make it possible to measure the most difficult to reach samples.

InLab®	Cool	Pure	Pure Pro	Reach	Reach Pro	Reach Pt1000	Hydrofluoric
Order number	51343174	51343170	51343171	51343060	51343061	51343062	51343176
Order number ISM version			51344172				
pH range	1...11	1...11	1...11	0...14	0...14	0...14	1...11
Temperature range	-30...80 °C	0...80 °C	0...80 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C
Temperature probe			NTC 30 kΩ		NTC 30 kΩ	Pt1000	
Type of membrane glass	LoT	LoT	LoT	HA	HA	HA	HF
Membrane resistance (25 °C)	< 50 MΩ	< 150 MΩ	< 50 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 100 MΩ
Type of junction	immovable glass sleeve	porous PTFE	immovable glass sleeve	Ceramic	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™ with Ag^+-trap	Ag/AgCl	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	FRISCOLYT-B®	Gel	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl
Bridge electrolyte			1 mol/L KCl				
Cable and connections	S7	S7	MultiPin™	S7	MultiPin™	MultiPin™	S7
Shaft material	Glass	Polysulfone	Glass	Glass	Glass	Glass	Glass
Shaft length	120 mm	120 mm	170 mm	300 mm	400 mm	400 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Storage	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl
Common specifications	Type of electrode: pH-combination						

Robust and Cost Effective

Cost-effective alternatives for smaller-scale requirements
These electrodes offer an outstanding price/performance ratio. With its maintenance-free gel electrolyte, the InLab® Easy is simplicity itself to operate. Its polysulfone shaft offers a cost-effective alternative for applications that demand a robust electrode.

The InLab® Basics BNC provides a glass electrode alternative for measurements in simple samples. The reference electrolyte of InLab® Basics and InLab® Versatile is refillable, but must be ordered separately and is not included with the electrode as in other models.

InLab®	Versatile	Versatile Pro	Easy	[1] Easy BNC	[2] Easy DIN	Basics BNC	[3] Basics DIN
Order number	51343030	51343031	51343010	51343011	51343012	51343020	51343021
Temperature range	0...100 °C	0...100 °C	0...80 °C	0...80 °C	0...80 °C	0...100 °C	0...100 °C
Temperature probe		NTC 30 kΩ					
Shaft material	Polysulfone	Polysulfone	Polysulfone	Polysulfone	Polysulfone	Glass	Glass
Type of membrane glass	U	U	U	U	U	HA	HA
Membrane resistance (25 °C)	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	Ag/AgCl	Ag/AgCl	Ag/AgCl	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	Gel	Gel	Gel	3 mol/L KCl	3 mol/L KCl
Cable and connections	1.2 m cable; BNC	1.2 m cable; BNC/RCA (Cinch)	S7	1.2 m cable; BNC	1.2 m cable; DIN 19262	1.2 m cable; BNC	1.2 m cable; DIN 19262
[1] **InLab® Easy 3m**	The InLab® Easy BNC is also available with a 3 m cable: Order number 51343013						
[2] **InLab® Easy Pt1000**	The InLab® Easy DIN is also available with a Pt1000 temperature probe (DIN 19262 / 4 mm banana): Order number 51343015						
[3] **InLab® Basics Pt1000**	The InLab® Basics DIN is also available with a Pt1000 temperature probe (DIN 19262 / 4 mm banana): Order number 51343023						
Common specifications	Type of electrode: pH combination / pH range: 0...14 / Shaft length: 120 mm / Shaft diameter: 12 mm / Storage: 3 mol/L KCl / Type of junction: Ceramic						

Useful Helpers

Sometimes two are better than one
pH half-cells are recommended for applications in which the service life of the pH electrode is significantly less than that of the reference electrode.

Moreover in certain highly demanding applications, they achieve better results than combination electrodes as mutual interference is reduced to an absolute minimum. The InLab® Reference Pro is the perfect reference electrode for measurements with ion-selective half-cells (pages 30–31).

InLab®	Mono	Mono Pro	Mono Bridge	Reference	Reference Pro	Reference Flow
Order number	51343195	51343196	51343197	51343190	51343191	51343192
Type of electrode	pH half-cell	pH half-cell	pH half-cell electrolyte bridge	reference electrode	reference electrode	reference electrode
pH range	0...14	0...12	0...12			
Temperature range	0...100 °C	0...130 °C	0...130 °C	0...100 °C	0...60 °C	0...130 °C
Type of membrane glass	HA	A41 thick-walled	A41			
Membrane resistance (25 °C)	< 600 MΩ	< 700 MΩ	< 600 MΩ			
Type of junction			Ceramic	Ceramic	Movable PTFE-sleeve	Triple ceramic
Reference system				ARGENTHAL™ with Ag^+-trap	Ag/AgCl	ARGENTHAL™
Reference electrolyte				3 mol/L KCl	Gel	3 mol/L KCl
Bridge electrolyte					3 mol/L KCl	
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl			
Common specifications	Shaft material: Glass / Cable and connections : S7 / Shaft length: 120 mm / Shaft diameter: 12 mm					

Artistry in Glass

Traditional values

These electrodes are part of the INGOLD tradition: there is no pH application for which there is not an optimal technical solution. These electrodes find their application in several somewhat exotic but nonetheless important applications in the food processing, paper and chemical industries. For the U402-611-DPA there is a specially developed thermostat controllable container for high precision measurements in automated cycles.

Designation	405-60-T-S7/120/9848	U402-S7/120	LoT403-M8-S7/120	HA425-60-S7/600	U402-M3-S7/200	403-34-S7/165	HA405-60-M8-S7/400	U402-611-DPA-S7/40	Flow-through cell 611
Order number	59904591	59902854	59902993	59904764	59904572	59902985	51340262	59902917	59904354
Former order number	114053000	104023311	104033199	114253000	114023009	104033178		104023528	106111000
pH range	0...12	0...14	1...11	0...14	0...14	0...12	0...14	1...11	
Temperature range	0...100 °C	0...80 °C	0...80 °C	0...130 °C	0...80 °C	0...80 °C	0...100 °C	0...80 °C	
Type of membrane glass	A41	U	LoT	HA	U	A41	HA	LoT	Flow-through cell for electrode U402-611-DPA, thermostatable Measuring volume approx. 0.5 mL
Membrane resistance (25 °C)	< 600 MΩ	< 300 MΩ	< 1000 MΩ	< 600 MΩ	< 1000 MΩ	< 2000 MΩ	< 600 MΩ	< 250 MΩ	
Type of junction	Triple ceramic	ceramic	ceramic	ceramic	ceramic	Quadruple ceramic	ceramic	Double ceramic	
Reference system	ARGENTHAL™	Ag/AgCl	Ag/AgCl	ARGENTHAL™	Ag/AgCl	Ag/AgCl	ARGENTHAL™	SteadyForce™	
Reference electrolyte	FRISCOLYT-B®	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl	DPA-Gel	
Shaft length	120 mm	120 mm	120 mm	600 mm	200 mm	165 mm	400 mm	40 mm	
Shaft diameter	12 mm	12 mm	8 mm	12 mm	3 mm	12 mm	8 mm	7 mm	
Storage	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl	3 mol/L KCl	
Common specifications	pH-combination / Shaft material: Glass / Cable and connections : S7								

High Potentials

Designation	
Order number	
Former order number	
Temperature range	
Type of junction	
Reference system	
Reference electrolyte	
Shaft material	
Shaft length	
Shaft diameter	
Metal	
Storage	
Common specifications	

"The problems with ORP samples with a complex composition such as industrial waste water or suspensions are similar to those for pH measurement: a normal ceramic junction becomes blocked and must be cleaned regularly. To facilitate cleaning and increase the electrode's service life when measuring in such critical samples, it is best to use an electrode such as the InLab® Redox Pro. This electrode is equipped with a high quality movable glass junction."

With the six combined ORP electrodes and the four metal half-cells, the full spectrum of applications is covered. The measuring signal of the redox electrode is generated on the surface of the precious metal by an exchange of electrons with the oxidation-reduction system of the measuring medium.
Platinum electrodes cover the majority of applications. In the case of highly oxidizing samples, it is best to use a gold electrode. Silver electrodes are primarily used for silver-based electrochemistry, e.g. chloride determination.

	Combined metal electrodes						Metal half-cells			
	InLab® Redox	**InLab® Redox-L**	**InLab® Redox Pro**	**InLab® Redox Micro**	**InLab® Redox Au**	**InLab® Redox Ag**	**Pt805-S7/120**	**Au805-S7/120**	**Ag805-S7/120**	**Ag850-S7/120**
	51343200	51343202	51343201	51343203	51343204	51343205	59904377	59904381	59904391	59904408
							108053117	108053121	108053152	108503079
	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	-30...130 °C	-30...130 °C	-30...130 °C	-30...80 °C
	Ceramic	Ceramic	Movable glass sleeve	Ceramic	Ceramic	Ceramic				
	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap				
	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO_3				
	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Polypropylene
	120 mm	170 mm	120 mm	100 mm	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
	12 mm	12 mm	12 mm	6 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
	Platinum ring	Platinum ring	Platinum ring	Platinum ring	Gold ring	Silver ring	Platinum ring	Gold ring	Silver ring	Silver tip
	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO_3	dry	dry	dry	dry
	Cable and connections: S7									

Ions in Motion

Designation
Order number
Order number ISM version
Measuring range
Temperature range
Temperature probe
Shaft material
Shaft length
Shaft diameter
Cell constant
Cell type
Cable and connections
[1] InLab® 731 – 2 m
[2] InLab® 741 – 5 m
[3] InLab® Trace Kit
Common specifications

"Each conductivity sensor is supplied with a certificate specifying the nominal cell constant. With the InLab® 741 and the InLab® Trace, the actual cell constant is fixed, which makes calibration superfluous."

Flow cells are recommended for measuring conductivity in pure water or in samples with low conductivity to rule out the falsification of results by carbon dioxide (for InLab® 741: order no. 51302257; for InLab® Trace: order no. 30014098). The InLab® Trace is also available as flow cell kit.

All conductivity cells are shipped in a ready-to-use condition and come equipped with plug and cable. A temperature sensor is integrated in all models to enable correction of the result to the desired reference temperature.
The InLab® 731 general purpose conductivity cell is suitable for a variety of applications in aqueous samples over 10 µS/cm. For samples that contain solvents, it is best to use measuring cells that are made of glass and platinum such as the InLab® 710 or the InLab® 720. With the high-performance InLab® Trace, samples down to 0.0001 µS/cm can be measured.

	[1] InLab® 731	[2] InLab® 741	[3] InLab® Trace	InLab® 710	InLab® 720	InLab® 725	InLab® 751-4mm	InLab® 752-6mm
	51344020	51344024		51302256	51302255	30014160	51344030	51344031
	30014092	30014094	30014097					
	0.01…1000 mS/cm	0.001…500 µS/cm	0.0001…1000 µS/cm	0.01…500 mS/cm	0.1…500 µS/cm	0.1…500 µS/cm	0.01…100 mS/cm	0.01…112 mS/cm
	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C
	NTC 30 kΩ	NTC 30 kΩ	Pt1000	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ
	Epoxy	Stainless steel	Titanium	Glass	Glass	Glass	Glass	Glass
	120 mm	120 mm	67 mm	120 mm	120 mm	120 mm	120 mm	180 mm
	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	4 mm	6 mm
	0.57 cm^{-1}	0.105 cm^{-1}	0.01 cm^{-1}	0.80 cm^{-1}	0.06 cm^{-1}	0.1 cm^{-1}	1.0 cm^{-1}	1.0 cm^{-1}
	4 graphite poles	2 steel poles	2 titanium poles	4 platinum poles	2 platinum poles	2 platinum poles	2 platinum poles	2 platinum poles
	1.2 m; Mini-DIN	1.2 m; Mini-DIN	1.8 m; Mini-LTW	1 m; Mini-DIN	1 m; Mini-DIN	1 m; Mini-DIN	1 m; Mini-DIN	1 m; Mini-DIN
	The InLab® 731 is also available with a 2 m cable: Order number 51344022, Order number ISM 30014093							
	The Inlab® 741 is also available with a 5 m cable: Order number 51344026							
	Kit with InLab® Trace and flow cell: Order number 30014099							
	Type of electrode: Conductivity cell							

The Right Electrode Every Time

Designation	
Order number	1.8 m cable
	5 m cable
	10 m cable
Measuring range	
Temperature range	
Temperature probe	
Type of membrane glass / detection	
Membrane resistance (25 °C)	
Type of junction / Cell type	
Reference system / -electrolyte	
Cell constant	
Shaft material	
Shaft lenght	
Shaft diameter	
Storage	
Connections	
Common specifications	

"It's great when the sensor keeps track of what you are doing, thereby preventing unnecessary errors: This is now possible thanks to the "Intelligent Sensor Management" technology (ISM®). The InLab® Expert Pro-ISM-IP67 automatically stores important information, such as the current calibration data or the maximum temperature to which the sensor was exposed.
When it is next connected to a meter in the SevenGo Duo™ series, the sensor is automatically detected, all data is transferred, and the measurement can begin immediately."

The SevenGo™ meters are fitted with high-performance electrodes as standard. An integrated temperature sensor enables automatic temperature compensation (ATC).
Thanks to the special fixed cable, these sensors are waterproof to IP67 and are therefore suitable for mobile use. All sensors are based on products which have proved themselves time and again, combining robustness with precise measurement technology. Their simple maintenance and long service life make them an attractive choice. A good example is the InLab® OptiOx for determining dissolved oxygen optically providing fast and accurate results.

	pH			Conductivity				Dissolved oxygen		
	InLab® Expert Pro-ISM-IP67	**InLab® 413 SG**	**InLab® Solids Pro IP67**	**InLab® 738-ISM**	**InLab® 738**	**InLab® 742-ISM**	**InLab® 742**	**InLab® 605-ISM**	**InLab® 605**	**InLab® OptiOx**
	51344102	51340288	51343156	51344110	51344120	51344116	51344126	51344611	51340291	51344621
	51344103	51340297		51344112	51344122	51344118	51344128	51344612	51340298	51344622
	51344104	51340289		51344114	51344124			51344613	51340292	51344623
	0...14 pH		0...11 pH	0.01...1000 mS/cm		0.001...500 µS/cm		0...200%, 0...20 mg/L		0...500%, 0...50 mg/L
	0...100 °C		0...80 °C	0...100 °C		0...100 °C		0...60 °C		0...50 °C
	NTC 30 kΩ			NTC 30 kΩ		NTC 30 kΩ		NTC 22 kΩ		NTC 30 kΩ
	U		LoT					polarographic		optical
	< 250 MΩ									
	Open junction			4 graphite poles		2 steel poles				
	ARGENTHAL™ / XEROLYT® Polymer		ARGENTHAL™ / XEROLYT®EXTRA							
				0.57 cm^{-1}		0.105 cm^{-1}				
	PEEK		Glass	Epoxy		steel V4A		PPS		PC / ABS
	120 mm		25 mm	120 mm		120 mm		120 mm		65 mm
	12 mm		6 mm	12 mm		12 mm		12 mm		16 mm
	FRISCOLYT-B®			dry		dry		dry		dry
	Fixed cable: BNC / RCA (Cinch)			Fixed cable: LTW		Fixed cable: LTW		Fixed cable: BNC / RCA (Cinch)		Fixed cable: Mini-LTW
	IP67									

Precise Determinations

"ISE measurement has never been so simple! The new Click & Clear™ junction of the combined ion-selective electrodes (with the exception of perfectION™ comb Na^+) combines three advantages in one tool:
The electrolyte solution can flow easily through the junction by pressing the electrode head downwards. This ensures that the junction is optimally cleaned between the measurements and the electrolyte can be simply emptied and refilled if necessary. Click & Clear™ is a sleeve junction that enables optimum contact between the electrolyte and measurement solution, even in difficult samples."

perfectION™ combined ISE: Complete solutions
All combined ion-selective electrodes consist of a measuring electrode complete with an integrated reference. There is therefore no need for an additional reference electrode. In electrodes with a polymer membrane, the membrane module can also be replaced. One replacement module is supplied with every new electrode; all at no extra cost!
To ensure an unproblematic start to your ISE measurement, the required calibration standards and ISA solutions (Ionic Strength Adjuster) can be ordered at the same time (page 34).

Measuring ion	perfectION™	Order number electrode	Cable and connections	Measuring range	Temperature range	Optimal pH range	Type of membrane	Reference electrolyte	Order no. membrane module	Order no. ISA solution
Ag^+/S^{2-}	comb Ag^+/S^{2-}	51344700	1.2 m; BNC	10^{-7}…1 mol/L Ag^+: 0.01…108000 mg/L S^{2-}: 0.003…32000 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte B 51344751		Ag^+: 51344760 S^{2-}: see manual
		51344800	1.2 m; Lemo							
Ca^{2+}	comb Ca^{2+}	51344703	1.2 m; BNC	5 * 10^{-7}…1 mol/L 0.02…40100 mg/L	0…40 °C	2.5…11	Polymer	Ion Electrolyte A 51344750	51344850	51344761
		51344803	1.2 m; Lemo							
Cl^-	comb Cl^-	51344706	1.2 m; BNC	5 * 10^{-5}…1 mol/L 1.8…35500 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte B 51344751		51344760
		51344806	1.2 m; Lemo							
CN^-	comb CN^-	51344709	1.2 m; BNC	8 * 10^{-6}…10^{-2} mol/L 0.2…260 mg/L	0…80 °C	10… 14	Solid state	Ion Electrolyte B 51344751		10 mol/L NaOH
		51344809	1.2 m; Lemo							
Cu^{2+}	comb Cu^{2+}	51344712	1.2 m; BNC	10^{-8}…0.1 mol/L 6.4 * 10^{-4}…6354 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte D 51344753		51344760
		51344812	1.2 m; Lemo							
F^-	comb F^-	51344715	1.2 m; BNC	10^{-6} mol/L… saturated 0.02 mg/L… saturated	0…80 °C	4.5 … 5.5	Solid state	Ion Electrolyte A 51344750		51344765
		51344815	1.2 m; Lemo							
I^-	comb I^-	51344718	1.2 m; BNC	5 * 10^{-8}…1 mol/L 0.005…127000 mg/L	0…80 °C	0…12	Solid state	Ion Electrolyte D 51344753		51344760
		51344818	1.2 m; Lemo							
K^+	comb K^+	51344721	1.2 m; BNC	10^{-6}…1 mol/L 0.04…39000 mg/L	0…40 °C	2.5…11	Polymer	Ion Electrolyte E 51344754	51344851	51344762
		51344821	1.2 m; Lemo							
[1] Na^+	comb Na^+	51344724	S7	10^{-7}…1 mol/L 0.002…23000 mg/L	0…80 °C	8…11	Na^+-Glass	3 mol/L KCl 51350072		NH_4Cl / NH_4OH
NO_3^-	comb NO_3^-	51344727	1.2 m; BNC	7 * 10^{-6}…1 mol/L NO_3^- 0.1…14000 mg/L NO_3^- as N	0…40 °C	2.5…11	Polymer	Ion Electrolyte F 51344755	51344852	51344763
		51344827	1.2 m; Lemo							
Pb^{2+}	comb Pb^{2+}	51344730	1.2 m; BNC	10^{-6}… 0.1 mol/L 0.2…20700 mg/L	0…80 °C	4…7	Solid state	Ion Electrolyte B 51344751		5 mol/L $NaClO_4$
		51344830	1.2 m; Lemo							

Common specifications: ion-selective electrode (ISE) with built-in reference, Type of junction: Click & Clear™, Shaft material: Epoxy
[1] **exception: perfectION™ comb Na^+:** S7 screw cap, ceramic diaphragm, ARGENTHAL™, Shaft material: Glass

Tried and Trusted

ISE half-cells: Modular and versatile
METTLER TOLEDO ion-selective half-cells (exception: Sodium-sensitive electrode) consist of two elements: a universal shaft and an ion-specific membrane module. This module may be exchanged allowing you to measure the ion of your choice.
Just order the membrane kit (contents: 1 membrane, 1 vial of electrolyte) specific for that ion, mount the new module onto the shaft of your ISE half-cell, and you have a new ISE! What is more, the membrane kit also comes with an identification ring (ID ring) and an adapter sleeve which will fit any METTLER TOLEDO titration stand.

Each ion-selective electrode (ISE) and each membrane module has been tested for wet-chemistry applications. It has to pass the stringent requirements of several direct measurements as well as a typical titration application. Each ISE is issued with its own serial number and quality certificate. There is no better quality assurance than this.
The METTLER TOLEDO ISE's are delivered in the same condition, as when they were tested. Therefore, they are already filled with electrolyte and ready for use.

Important: requires the use of a separate reference electrode and appropriate cables.

Measuring ion	Designation	Order number electrode	Measuring range	Temperature range	Optimal pH range	Type of membrane	Shaft material	Order no. membrane kit	Order no. electrolyte	Electrolyte for reference electrode	ISA solution
Ba^{2+}	DX337-Ba^{2+}	51107674	10^{0}...$4*10^{-7}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107688	51107892	3 mol/L KCl	1 mol/L $Tris_2$ HCl
BF_4^-	DX287-BF_4^-	51107676	10^{0}...$3*10^{-7}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107690	51107890	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Br^-	DX280-Br^-	51340300	10^{0}...$1*10^{-6}$ mol/L	0...80 °C	2...13	Solid state	POM	51340006	51340029	1 mol/L KNO_3	1 mol/L KNO_3
Ca^{2+}	DX240-Ca^{2+}	51340600	10^{0}...$1*10^{-6}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340009	51340032	3 mol/L KCl	4 mol/L KCl
Cd^{2+}	DX312-Cd^{2+}	51107672	10^{0}...$1*10^{-6}$ mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107686	51107891	1 mol/L KNO_3	1 mol/L KNO_3
Cl^-	DX235-Cl^-	51340400	10^{0}...$2*10^{-5}$ mol/L	0...80 °C	2...13	Solid state	POM	51340007	51340030	1 mol/L KNO_3	1 mol/L KNO_3
CN^-	DX226-CN^-	51107681	10^{0}...$2*10^{-6}$ mol/L	0...80 °C	4...13	Solid state	POM	51107695	51107893	1 mol/L KNO_3	10 mol/L NaOH
Cu^{2+}	DX264-Cu^{2+}	51107678	10^{0}...$5*10^{-7}$ mol/L	0...80 °C	2...8	Solid state	POM	51107692	51107889	1 mol/L KNO_3	1 mol/L KNO_3
F^-	DX219-F^-	51340500	10^{0}...$5*10^{-7}$ mol/L	0...80 °C	4...10	Solid state	POM	51340008	51340031	3mol/L KCl	TISAB III
I^-	DX327-I^-	51107680	10^{0}...$2*10^{-8}$ mol/L	0...80 °C	1...13	Solid state	POM	51107694	51107898	1 mol/L KNO_3	1 mol/L KNO_3
K^+	DX239-K^+	51340700	10^{0}...$1*10^{-6}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340010	51340033	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Li^+	DX207-Li^+	51107673	10^{0}...$1*10^{-6}$ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51107687	51107881	3 mol/L KCL	0.5 mol/L $MgSO_4$
Na^+	DX223-Na^+	51340263	10^{0}...$1*10^{-7}$ mol/L	0...80 °C	8...11	Na Glass	Glass			0.1 mol/L NH_4Cl	NH_4Cl / NH_4OH
NH_4^+	DX218-NH_4^+	51340900	10^{0}...$4*10^{-7}$ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51340012	51340035	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
NO_3^-	DX262-NO_3^-	51340800	10^{0}...$3*10^{-5}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340011	51340034	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Pb^{2+}	DX407-Pb^{2+}	51107873	10^{0}...$3*10^{-6}$ mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107874	51107875	1 mol/L KNO_3	1 mol/L KNO_3
S^{2-}/Ag^+	DX232-S^{2-}	51107675	10^{0}...$1*10^{-8}$ mol/L	0...80 °C	4...13	Solid state	POM	51107689	51107894	1 mol/L KNO_3	10 mol/L NaOH
SCN^-	DX258-SCN^-	51107870	10^{0}...$2*10^{-6}$ mol/L	0...80 °C	2...10	Solid state	POM	51107871	51107872	1 mol/L KNO_3	1 mol/L KNO_3
Common specifications		Type of electrode: ion-selective half-cell; Cable and connections: S7									

Amazing Solutions

Buffer solutions with a quality inspection certificate
Any pH measurement is only as accurate as the buffer solution used for calibration purposes. The internationally recognized pH scale is based on standard reference materials (SRM) selected by NIST (National Institute of Standards and Technology, USA).
METTLER TOLEDO buffer solutions are traceable to these primary standards and come with a quality inspection certificate, which guarantees the stated values and traceability.
They are particularly suitable, therefore, for use in quality assurance systems.

Download your detailed test certificate at **www.mt.com/buffer**.
Download the material safety datasheet (MSDS) at **www.mt.com/msds**.

Buffers, Standards	pH value at 25 °C	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
Technical pH buffer solutions	2.00	51350002	51350016	
	4.01	51350004	51350018	51302069
	7.00	51350006	51350020	51302047
	9.21	51350008	51350022	51302070
	10.00	51350010	51350024	51302079
	11.00	51350012	51350026	
	Rainbow I (3 x 10 sachets 20 mL 4.01 / 7.00 / 9.21)			51302068
	Rainbow II (3 x 10 sachets 20 mL 4.01 / 7.00 / 10.01)			51302080
NIST/DIN pH buffer solutions	4.006	51350052		
	6.865	51350054		
	9.180	51350056		
	10.012	51350058		
Certified pH buffer solutions	4.01	51350032	51350042	
	7.00	51350034	51350044	
	9.21	51350036	51350046	
	10.00	51350038	51350048	
Redox buffer solutions	**E (Ag/AgCl) 25 °C**	**Order number 250 mL**	**Order number 6 x 250 mL**	**Order number 6 x 30 mL**
	220 mV, pH 7 (U_H = 427 mV)	51350060	51350062	
	468 mV, pH 0.1 (U_H = 675 mV)			51350064

Electrolytes for reference electrodes	Order number 25 mL	Order number 250 mL	Order number 6 x 250 mL	Order number 6 x 30 mL
KCl-solution 3 mol/L for ARGENTHAL™ reference systems	51343180	51350072	51350080	
KCl-solution 3 mol/L, AgCl saturated, for Ag/AgCl reference systems	51343184	51350074	51350082	
FRISCOLYT-B®, for measurement at low temperature and for media with organic compounds (oil, proteins etc.)	51343185	51350076	51350084	
LiCl Solution 1 mol/L in ethanol, for measurement in non-aqueous media				51350088

Cleaning solutions	Order number 250 mL	Order number 25 mL
Pepsin-HCl for cleaning junctions with protein contamination. Treatment time about 1 h.	51350100	
Thiourea solution for cleaning junctions with silver sulfide contamination. Treatment until discoloration.	51350102	
Reactivation solution for regeneration of glass electrodes. Treatment time about 1 min.		51350104

Conductivity standards	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
10 µS/cm	51300169		
84 µS/cm	51302153		
500 µS/cm	51300170		
1413 µS/cm	51350092	51350096	51302049
12.88 mS/cm	51350094	51350098	51302050

DO Accessories	Order number
Zero oxygen tablets (20 pcs.)	51300140

Solutions for ISE

Solutions for perfectION™ combined ISE		
Reference electrolytes	**Order number 5 x 60 mL**	
Ion Electrolyte A (calcium, fluoride, sulfide)	51344750	
Ion Electrolyte B (chloride, cyanide, lead, silver/sulfide)	51344751	
Ion Electrolyte C (silver)	51344752	
Ion Electrolyte D (copper, iodide)	51344753	
Ion Electrolyte E (potassium)	51344754	
Ion Electrolyte F (nitrate)	51344755	
ISA solutions	**Order number 475 mL**	**Order number 3790 mL**
ISA solid state ISE (chloride, copper, iodide, silver)	51344760	
Calcium ISA	51344761	
Potassium ISA	51344762	
Nitrate ISA	51344763	
Nitrate ISS (for suppressing interference)	51344764	
Fluoride TISAB II with CDTA		51344765
Fluoride TISAB III with CDTA (concentrate)	51344766	

Solutions for DX series ISE half-cells			
Bridge electrolytes	**Order number 25 mL**	**Order number 250 mL**	**Order number 6 x 250 mL**
1 mol/L KNO_3	51343182	51350078	51350086
3 mol/L KCl	51343180	51350072	51350080
1 mol/L KCl	51343181		
ISA solutions			
TISAB 3, for fluoride determinations		51350106	
0.9 mol/L $Al_2(SO_4)_3$		51350108	

ISE calibration standards	Order number 500 mL
Silver ISE standard solution 1000 mg/L	51344770
Calcium ISE standard solution 1000 mg/L	51344771
Chloride ISE standard solution 1000 mg/L	51344772
Cyanide ISE standard solution 1000 mg/L	51344773
Copper ISE standard solution 1000 mg/L	51344774
Fluoride ISE standard solution 1000 mg/L	51344775
Iodide ISE standard solution 1000 mg/L	51344776
Potassium ISE standard solution 1000 mg/L	51344777
Sodium ISE standard solution 1000 mg/L	51344778
Nitrate ISE standard solution 1000 mg/L	51344779
Lead ISE standard solution 1000 mg/L	51344780
Sulfide ISE standard solution 1000 mg/L	51344781

The Right Accessory Every Time

Separate temperature sensors

Description	InLab® NTC 30 kΩ laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	InLab® Pt1000 laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	NTC 30 kΩ laboratory temperature sensor in stainless steel (120 x 3 mm), steel 316	Pt1000 laboratory temperature sensor in stainless steel (120 x 3 mm), steel 316
Order Number	51343310	51343312	51300164	51300165
Cable and connections	S7	S7	1.2 m; RCA (Cinch)	1.2 m; 2 x 4 mm banana

Accessories		Description	Order number
	**Accessories for OptiOx™**	OptiOx™ replacement cap	51344630
		OptiOx™ calibration tube	51344631
		OptiOx™ protective guard	51344632
		OptiOx™ BOD adapter	51344633
	**Flow cell**	Flow cell for sensors with a shaft diameter of 12 mm (material: glass)	51302257
	**Wetting caps (Minimum order amount 5 units)**	For electrodes with shaft diameter 12 mm	51340020
		For electrodes with movable sleeve junction	59900364
		For electrodes with shaft diameter 8 mm and InLab® Solids / InLab® Solids Pro	51340021
		For electrodes with shaft diameter 6 mm	52000442
		For electrodes with shaft diameter 3 mm	52000441
	**Storage vial**	Vial for storage of pH electrodes	51343320
	SafeLock™	SafeLock™ cover for refill hole of pH electrodes (5 pcs.)	51343315
	Adapter	Adapter sleeve to NS 14.5 for sensors with 12–15 mm shaft diameter (material: PE)	51340024

Plug'n'play...

Universal
METTLER TOLEDO pH electrodes can easily be connected to various third-party instruments. All you have to do is select the appropriate cable. We offer a wide choice of cable lengths and plug combinations.

Connection	Length	Designation	Plug	Socket on the meter	Order number
MultiPin™ 	1.2 m 2.5 m	BNC/RCA (Cinch) BNC/RCA (Cinch)			52300009 51340290
	2.0 m 5.0 m	ISM BNC/RCA (Cinch) BNC/RCA (Cinch)			51344291 51344292
	1.2 m	BNC/1 x 4 mm			52300011
	1.2 m	DIN/RCA (Cinch)			52300007
	1.2 m 5.0 m	DIN 19262/1 x 4 mm DIN 19262/1 x 4 mm			52300005 52300139
	1.2 m	Lemo 00/2 x 4 mm (Metrohm)			59902371

Connection	Length	Designation	Plug	Socket on the meter	Order number
S7 gray 	1.2 m	BNC			52300004
	1.2 m	DIN 19262			52300001
	1.2 m	DIN 19262 gold plated			52300036
	1.2 m	Radiometer type 7			52300013
	1.2 m	US-Standard			52300014
	1.2 m	BNC (IP67)			52300046
	1.2 m	no connector			52300025
	5.0 m	DIN 19262 gold plated			52300037
	5.0 m	no connector			52300002

Connection	Length	Designation	Plug	Socket on the meter	Order number
For reference electrodes and temperature probes 	1.2 m	4 mm banana			52300015
	1.2 m	2 mm banana			52300016
	1.2 m	RCA (Cinch)			51343314
	1.2 m	2 x 4 mm			59902399
S7 red  The red color is only design related for the RedCap specialists from p. 21/23.	1.0 m 3.0 m	BNC BNC			59902392 59902417
	1.0 m	DIN 19262			59902382
	1.0 m 3.0 m	4 mm banana 4 mm banana			59902434 59902438
	1.0 m	Radiometer type 7			59902390
	1.0 m	Lemo 00 (Metrohm)			59902398
	3.0 m	DIN 19262			59902408
	3.0 m	Radiometer type 7			59902416
	3.0 m	Lemo 00 (Metrohm)			59902409
	1.0 m 3.0 m	no connector no connector			59902387 59902414
	5.0 m	BNC			59902427
	5.0 m	DIN 19262 detachable			59902425
	10.0 m	no connector			59902431

Simple and Accurate Measurements

Seven is a product line that combines precise electrochemical measuring technologies with innovative design and ease of use. It fulfills the highest demands for pH, conductivity and ion measurements and meets the latest requirements for quality control, data management and legal regulations (GxP, USP/EP). The self-explanatory user interface allows intuitive operation at all stages.

You can obtain information about METTLER TOLEDO's modern Seven meter series at **www.mt.com/pH** or from the separate **SevenExcellence™ Benchtop Meters** brochure (30046381), **SevenCompact™ Benchtop Meters** brochure (30019036) and **SevenGo™ Portable Meters** brochure (51725122).

SevenCompact™ – truly universal and reliable

- Single-channel meter for routine measurements
- pH/Ion or conductivity
- Excellent price/performance ratio

SevenExcellence™ – for precise and secure measurements combined with high flexibility

- Professional triple-channel meter
- pH, conductivity, ISFET and ions with modular expansion capability
- Full GLP support

SevenGo™ – pure flexibility

- Portable meters for pH, conductivity, ion and dissolved oxygen determination
- Robust, watertight single- and dual-channel meters for use under demanding conditions
- Efficiency thanks to unique ergonomics and extremely simple operation

METTLER TOLEDO
a World of Possibilities ...

100% quality control
Each METTLER TOLEDO electrode is individually tested before it leaves our factory. A quality certificate is enclosed with each electrode, which guarantees traceability under ISO 9000. The serial number is engraved in the electrode head to ensure easy identification even after years of use.

METTLER TOLEDO gone global...

the contact addresses of METTLER TOLEDO representatives globally can be found under the Internet address **www.mt.com/contacts**

otherwise:
Mettler-Toledo AG
PO Box VI-400, CH-8606 Greifensee
Tel. +41 44 944 22 11
Fax +41 44 944 31 70

Mettler-Toledo AG, Analytical,
CH-8603 Schwerzenbach, Switzerland
Telefon +41 22 567 53 22, Fax +41 22 567 53 23
Internet: www.mt.com

www.mt.com
For more information

Quality certificate. Development, production and testing according to ISO 9001.

Environmental management system according to ISO 14001.

"European conformity". The CE conformity mark provides you with the assurance that our products comply with the EU directives.