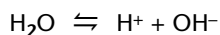




pH Meters

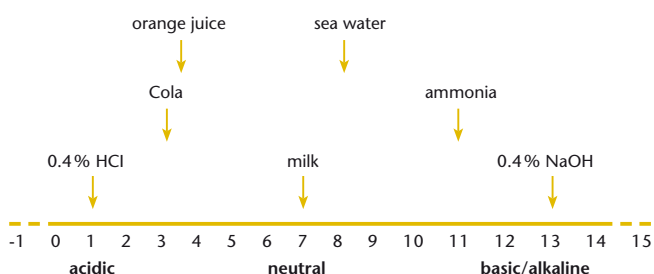
pH Value

The water molecule has the property of dissociating into two ionic components in aqueous solutions.



The H^+ ion is termed hydrogen ion or proton, the OH^- ion hydroxide ion.

The pH value describes the activity of hydrogen ions in aqueous solutions on a scale of -1 to 15. Based on this scale, liquids are characterized as being acidic, alkaline or neutral: a solution which is neither acidic or alkaline is neutral. This corresponds to a value of 7 on the scale. Acidity indicates a higher activity of hydrogen ions and a pH value lower than 7. Alkaline solutions are characterized by a lower hydrogen ion activity or higher hydroxide ion activity, respectively and a pH value above 7. The graph below uses examples to illustrate the pH scale.



The pH scale is logarithmic. A difference of one pH unit represents a tenfold, or ten times increase or reduction of hydrogen ion activity in the solution. This explains how a solution's aggressiveness increases with the distance from the neutral point.

The pH value can be measured using electrochemical measuring systems, litmus paper, indicators and colorimeters. Of these methods, electrochemical sensors provide the most accurate results.

The pH electrode is an electrochemical sensor which consists of a measuring electrode and a reference electrode. The measuring electrode is made of special glass which, due to its surface properties, is particularly sensitive to hydrogen ions. It is filled with a buffer solution which has a pH value of 7. When placing the pH electrode into a test solution, the change in voltage is measured by the electrode by comparing the measured voltage to the stable reference electrode. This change is recorded by the meter and converted into the pH value displayed.

Application range pH-measurement

● recommended by WTW ○ conditionally applicable – not recommended

Application range	inoLab®						Profiline pH 197i	VARIO® pH	Handheld meters			
	pH 720	pH 730	pH/ION 735	pH 740	pH/ION 740	pH/ION/Cond 750			pH 315i	pH 330i	pH 340i	pH/ION 340i
Routine measurement	●	○	○	○	○	○	○	●	●	●	○	○
Routine measurement with documentation	-	●	●	●	●	●	●	-	-	-	●	●
AQA with documentation	-	●	●	●	●	●	●	-	-	-	●	●
R&D high resolution and precision	-	●	●	●	●	●	●	-	-	●	●	●
Control measurements	-	●	●	●	●	●	●	●	-	●	●	●
LIMS connection	-	●	●	●	●	●	●	-	-	-	○	○
Quality assurance	-	●	●	●	●	●	●	-	-	●	●	●
Training	●	●	●	●	○	○	○	●	●	●	○	○
Service	-	-	-	-	-	-	●	●	●	●	●	●
Laboratory measurements	●	●	●	●	●	●	●	●	-	-	○	○
Field measurements	-	-	-	-	-	-	●	-	●	●	●	●
Depth measurements	-	-	-	-	-	-	●	-	-	-	-	-
External control/ PC connection/ PC control	-	●	●	●	●	●	●	-	-	-	●	●
pH/ION function	-	-	●	●	●	●	-	-	-	-	-	●
Ion-specific measurement programs	-	-	●	-	●	●	-	-	-	-	-	-
<i>see page</i>	12	12	24	13	25	52	14	16	15	15	15	27

For pH measurement with multi-parameter instruments see page 48



Laboratory pH Meters

Along with weighing and temperature measurements, pH is the most measured parameter in the laboratory. With inoLab® WTW offers a family of laboratory instruments which meet all measurement requirements from routine measurements to research applications.

inoLab® pH 720

inoLab
innovations that make sense

- Routine meter for precise measurement values (0.001 pH)
- Large display
- Easy-to-clean membrane keypad

simple and reliable

Easy to use routine laboratory pH/mV meter with large multifunctional display for pH and temperature, automatic temperature compensation, MultiCal® calibration system; for battery or line power operation.



inoLab® pH 730

inoLab
innovations that make sense

- Supports all GLP needs
- Built-in printer (optional)
- Datalogger with memory for 800 data sets

compact and precise

Precision pH/mV meter with large multifunctional display for pH and temperature, automatic temperature compensation, MultiCal® calibration system, built-in measurement storage with GLP-conforming documentation and digital interface. Shown with optional built-in printer.



inoLab® pH 740

- Computer-controlled precision meter
- EMC-stabilized
- Upgradeable firmware/software

additional features

- 5-point calibration
- Selectable buffers
- Real-Time Graphic Display
- Built-in digital recorder
- Connection for bar-code reader or PC keyboard
- User Selectable Languages
- Multi-Level GLP Functions (password-protected operator levels)
- Free-of-charge downloads for MultiLab® pilot or terminal


flexible and powerful

High-performance pH/mV/ION meter with graphic display and digital recorder function for pH, temperature and ion-selective measurement, automatic temperature compensation, high resolution (0.001 pH), MultiCal® calibration system, built-in measurement storage with GLP-conform documentation and digital interface. PC keyboard interface for connecting an external keyboard or a barcode reader. Includes software for direct control by PC. Built-in printer option available.

Technical Data				
Model		pH 720	pH 730	pH 740
Range/ Resolution	pH	-2.000 ... +19.999 pH		-2.000 ... +20.000 pH
	mV	-2.00 ... +19.99 pH		-2.00 ... +20.00 pH
	Temp.	-999.9 ... +999.9 mV; -1,999 ... +1,999 mV		-999.9 ... +999.9 mV; -2,000 ... +2,000 mV
Accuracy (±1 digit)	pH	-5.0 ... +105.0 °C (23 ... 221 °C)		-5.0 °C ... +105.0 °C (23 ... 221 °C)
	mV	±0.005 pH	±0.005 pH	±0.004 pH
	Temp.	±0.01 pH	±0.01 pH	±0.01 pH
Calibration		±0.3 mV, ±1 mV	±0.3 mV, ±1 mV	±0.2 mV, ±1 mV
		±0.1 K	±0.1 K	±0.1 K
		MultiCal® automatic calibration:	MultiCal® automatic calibration:	MultiCal® automatic calibration:
	AutoCal	2-/3-point	2-/3-point	2-/3-/4-/5-point
	AutoCal-Tec	2-/3-point	2-/3-point	2-/3-/4-/5-point
	ConCal®	1-/2-point	1-/2-point	1-/2-point
	ISECal	-	-	2- and 3-point

Ordering Information			
inoLab® Laboratory pH Meter SETs		□ Order No.	▲ Order No.
inoLab® pH 720	Simple and reliable pH meter, including SenTix® 42/41, without passive multifunction box and accessories	1A10-2117	1A10-1112
inoLab® pH 730	Compact precision pH meter with serial interface, including SenTix® 82/81, passive multifunction box and accessories	1A20-2119	1A20-1114
inoLab® pH 740P	The intelligent pH measuring station, additionally equipped with built-in printer, incl. terminal, SenTix® 82/81 and accessories	1A31-2119	1A31-1114
Passive multifunction box	(not included in pH 720 Set)	109 810	109 810



□ with BNC plug, ▲ with DIN plug

Other SETs or electrodes in SET see brochure "Product Details"

Portable pH Meters

All WTW meters in the ProfiLine pH 197i series are both waterproof (IP 66) and submersible (IP 67). In addition, these units are able to float providing a high degree of comfort when used in field applications. With GLP memory functions, real-time clock, a display corresponding to the recorder output, 800 data records memory capacity, a carry handle, strap standard, the ProfiLine197i supplied with integrated powerful NiMH rechargeable batteries is a complete pH measuring system. When used with the TA 197 pH Depth Armature, the ProfiLine 197i with its built-in preamplifier, is accurate to a depth of 330 ft (100 m).

ProfiLine pH 197i

- Robust, shockproof
- Fully waterproof
- Standard pH measurement and pH measurement down to depths of 330 ft (100 m)



Depth armature TA 197 pH

Technical Data

Model	ProfiLine pH 197i	
Range/ Resolution	pH mV Temp.	-2.00 ... +19.99 pH, -199.9 ... +199.9 mV; -1999... +1999 mV -5.0 ... +105.0 °C (23 ... 221 °F)
Accuracy (±1 digit)	pH mV Temp.	±0.01 pH, ±0.5 at +15 °C ... +35 °C (59 ... 95 °F), ±1 at +15 °C ... +35 °C (59 ... 95 °F) ±0.1 K
Calibration	MultiCal® automatic calibration: 1,2,3-point calibration, AutoCal, AutoCal-Tec and ConCal®	

Ordering Information

Portable pH Meter – with wide-range power supply 100-240 VAC (50/60 Hz) included	Order No.
ProfiLine pH 197i Robust, waterproof, submersible pH/mV meter	3A30-110



Depth armatures for measurements down to depths of 330 ft (100 m)
see brochure "Product Details"

Handheld pH Meters

WTW handheld pH meters are optimized for use on-site and field use, but can also be used in the laboratory. In particular the pH 340i, with its optional line power supply and serial interface, is suitable for applications in which precise measurements are required both in the laboratory and the field.

WTW handheld pH meters are available in three versions:

pH 315i:

Robust and waterproof battery-operated pH/mV meter. Measuring errors are avoided by the silicone keypad with only 5 keys and a simplified calibration method with automatic buffer recognition and display for standard buffers. AutoRead ensures stable and reproducible results.

pH 330i:

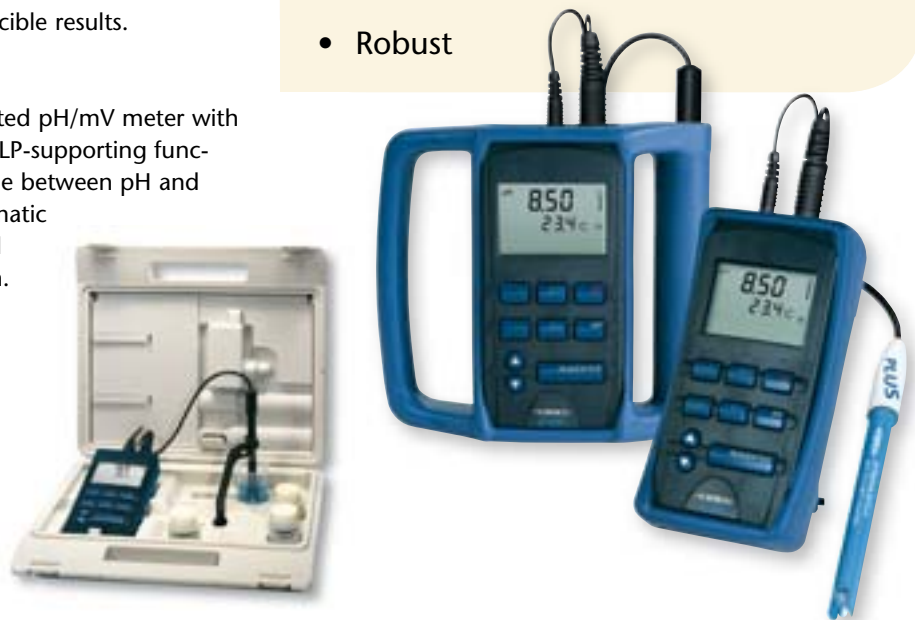
Robust and waterproof battery-operated pH/mV meter with built-in datalogger, real-time clock, GLP-supporting functions, display for calibration switchable between pH and mV. Configured with MultiCal[®] automatic calibration for buffer recognition, and automatic temperature compensation.

pH 340i:

Features of pH 330i, with additional analog and digital RS 232 output.

pH 315i, pH 330i, pH 340i

- Waterproof (IP 67)
- Large silicone keys
- Robust



Technical Data		
Model	pH 315i	pH 330i and pH 340i
Range/ Resolution	pH -2.00 ... +16.00 pH mV -1999 ... +1999 mV Temp. -5.0 ... +105.0 °C (23 ... 221 °F)	-2.000 ... +19.999 pH; -2.00 ... +19.99 pH -999.9 ... +999.9 mV; -1999 ... +1999 mV -5.0 ... +105.0 °C (23 ... 221 °F)
Accuracy (±1 digit)	pH ±0.01 pH mV ±0.3 mV at +15 °C ... +35 °C (59 ... 95 °F) Temp. ±0.1 K	±0.005 pH at +15 °C ... +35 °C (59 ... 95 °F) ±0.3 mV at +15 °C ... +35 °C (59 ... 95 °F) ±0.1 K
Calibration	Simplified 1, 2 or 3-point calibration with automatic buffer recognition AutoCal automatic 3-point calibration with DIN buffers	MultiCal[®] automatic calibration: AutoCal automatic 1-, 2- or 3-point calibration with DIN buffers AutoCal-Tec automatic 1-, 2- or 3-point calibration with WTW technical buffers ConCal [®] conventional 2-point calibration with any buffers

Ordering Information

Handheld pH Meter SETs	Order No.
pH 315i Robust and waterproof handheld pH meter, for battery operation, in mobile case set with SenTix [®] 41	2A10-1012
pH 330i Robust and waterproof handheld pH meter with datalogger, for battery operation, in mobile case set with SenTix [®] 41	2A20-1012
pH 340i Robust and waterproof handheld pH meter with datalogger and serial interface, in mobile case set with SenTix [®] 41	2A30-1012
Universal wide-range power supply 100 V - 240 V, 50-60 Hz; for 340i series	902 867



Other electrodes in SET see brochure "Product Details"

VARIO®

You notice it immediately: apart from its ergonomic form the new VARIO® has no keys, but has an innovative touch screen instead. In this way all functions can be called up and set – a simple touch is enough.

VARIO® pH



- Compatible with most electrode types
- One-hand operation
- Twistable display

Measuring in no time at all

Just a fingertip touch on the display – and VARIO® is ready for use. Immersion in the solution starts the measurement automatically. The stable measurement can be read from the large display together with the temperature and can also be “frozen”. The memory has space for up to 50 measured values for later evaluation.



If the VARIO® is not being used for pH measurements then it can be used as a laboratory clock or timer.



Light, handy, robust – it finds a place in every laboratory coat without dripping or leaving nasty stains, as it can be stored without KCl.



The VARIO® can operate continuously for 1500 hours on one easily replaceable AA (1.5 V) battery.

VARIO® comes standard with an intelligent glass electrode that is protected by a plastic casing. The conical protective cap does not require KCl which prevents the electrode from dripping and protects it from drying out.

The VARIO® can do even more.

The adapter contained in the VARIO® Set makes the instrument compatible with commercially available precision electrodes. The VARIO® measures as accurately and reliably as a handheld instrument.

You can twist and turn as much as you want, the VARIO® is an essential aid whenever speed is required in the laboratory or in production.



Technical Data

Model	VARIO® pH
pH range	-2.00 ... 16.00
pH accuracy	±0.01 pH
Temperature	-5.0 ... 100.0°C (23 ... 212 °F)
Automatic buffer recognition	TEC/NIST
Calibration points	3 (MultiCal®)

Ordering Information

VARIO®		Order No.
VARIO® Set	VARIO® in the mobile case set, incl. short electrode with built-in temperature sensor and technical buffer 4 and 7	2V00-001V



Other electrodes see brochure “Product Details”

pH Electrodes and Accessories



SenTix® PLUS Electrodes

Model	SenTix® 20 103 630	SenTix® 21 103 631	SenTix® 21-3 103 632	SenTix® 22 103 633	SenTix® 41 103 635	SenTix® 41-3 103 636	SenTix® 42 103 637	SenTix® 51 103 651	SenTix® 52 103 652	SenTix® 60 103 639	SenTix® 61 103 640	SenTix® 62 103 641	SenTix® 81 103 642	SenTix® 82 103 643	SenTix® 91 103 695	SenTix® 92 103 696
Measuring range pH	0 ... 14 pH				0 ... 14 pH			0 ... 14 pH		0 ... 14 pH			0 ... 14 pH		0 ... 14 pH	
Operating range °C (°F)	0 ... 80 °C (32...176 °F)				0 ... 80 °C (32...176 °F)			0 ... 80 °C (32...176 °F)		0 ... 100 °C (32...212 °F)			0 ... 100 °C (32...212 °F)		0 ... 100 °C (32...212 °F)	
Reference electrolyte	Gel				Gel			KCl 3 mol/l, Ag ⁺ -free		KCl 3 mol/l, Ag ⁺ -free			KCl 3 mol/l, Ag ⁺ -free		KCl 3 mol/l, Ag ⁺ -free	
Membrane shape	Cylindrical				Cylindrical			Cylindrical		Conical			Conical		Spherical	
Membrane resistance at 25 °C (77 °F)	<1 GΩ				<1 GΩ			<1 GΩ		<600 MΩ			<600 MΩ		<600 MΩ	
Diaphragm	Fiber				Ceramics			Platinum		Platinum			Platinum		Platinum	
Shaft material	Noryl				Noryl			Topas®		Glass			Glass		Glass	
Shaft length (±2 mm)	120 mm				120 mm			120 mm		120 mm			120 mm		170 mm	
Shaft Ø (±0,5 mm)	12 mm				12 mm			12 mm		12 mm			12 mm		12 mm	
Temperature Sensor	-				built-in NTC (30 KΩ)			built-in NTC (30 KΩ)		-			built-in NTC (30 KΩ)		built-in NTC (30 KΩ)	
Connection	①	②	②	②	②	②	②	②	②	①	②	②	②	②	②	②
Electrode cable	③	④	⑤	④	④	⑤	④	④	④	③	④	④	④	④	④	④
Electrode plug	⑥/⑦	⑥	⑥	⑦	⑥+⑧	⑥+⑧	⑦+⑧	⑥+⑧	⑦+⑧	⑥/⑦	⑥	⑦	⑥+⑧	⑦+⑧	⑥+⑧	⑦+⑧



SenTix® PLUS Electrodes

Model	SenTix® L 103 655	SenTix® Mic-D 103 660		Mic-B 103 661	SenTix® HWS 103 662	SenTix® RJS 103 663	SenTix® pH 103 667	SenTix® R 103 668	SenTix® B 103 669
	Measuring range pH	0 ... 14 pH	0 ... 14 pH			0 ... 14 pH	2 ... 13 pH	0 ... 14 pH	-
Operating range °C (°F)	10 ... 100 °C (50 ... 212 °F)	-5 ... 100 °C (23 ... 212 °F)			-5 ... 100 °C (23 ... 212 °F)	0 ... 80 °C (32...176 °F)	0 ... 80 °C (32...176 °F)	-5 ... 100 °C (23 ... 212 °F)	-5 ... 100 °C (23 ... 212 °F)
Reference electrolyte	KCl 3 mol/l	KCl 3 mol/l			KCl 3 mol/l	Referid®	-	KCl 3 mol/l	Double electrolyte system
Membrane shape	Spherical	Cylindrical			Spherical	Calotte	Spherical	-	-
Membrane resistance at 25 °C (77 °F)	< 600 MΩ	< 1 GΩ			< 600 MΩ	< 600 MΩ	< 600 MΩ	-	-
Diaphragm	Platinum	Platinum			Cut	Split ring	-	Platinum	Cut
Shaft material	Glass	Glass			Glass	Glass	Glass	Glass	Glass
Shaft length (±0.08 in./±2 mm)	16.73 in. (425 mm)	3.78 in. (96 mm) (from upper edge of ground)			6.69 in. (170 mm)	4.72 in. (120 mm)	4.72 in. (120 mm)	4.72 in. (120 mm) (from upper edge of ground)	4.06 in. (103 mm)
Shaft Ø *	0.47 in. (12 mm)	0.12 in. (3 mm)			0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)
Temperature Sensor	built-in NTC (30 KΩ)	-			built-in NTC (30 KΩ)	built-in NTC (30 KΩ)	-	-	-
Connection	⑨	⑥, ⑦			⑨	⑨	③	⑩	⑩

①: Plug head, ②: Fixed cable, ③: AS/DIN, AS/DIN-3 or AS/BNC, ④: Cable length 3 ft (1 m), ⑤: Cable length 9 ft (3 m), ⑥: DIN plug, * (±0.02 in./±0.5 mm)
⑦: BNC plug, ⑧: Banana plug, ⑨ AS S/D1 or AS S/D3 or AS S/B1 or AS S/B3, ⑩ AS S/R



SenTix® PLUS Special Electrodes

Model Order No.	SenTix® H 103 644	SenTix® HW 103 650	SenTix® SP 103 645	SenTix® Sur 103 646	SenTix® Mic 103 647	SenTix® V 103 690	SenTix® FET-D 103 700	.../-B 103 702
Measuring range pH	0 ... 14 pH	0 ... 14 pH	2 ... 13 pH	2 ... 13 pH	0 ... 14 pH	0 ... 14 pH	0 ... 14 pH	
Operating range °C	0 ... 80 °C (32 ... 176 °F)	0 ... 60 °C (32 ... 140 °F)	0 ... 80 °C (32 ... 176 °F)	0 ... 50 °C (32 ... 122 °F)	0 ... 100 °C (32 ... 212 °F)	0 ... 80 °C (32 ... 176 °F)	0 ... 60 °C (32 ... 140 °F)	
Reference electrolyt	KCl 3 mol/l, Ag ⁺ -frei	KCl 3 mol/l, Ag ⁺ -frei	Referid®	Referid®	KCl 3 mol/l, Ag ⁺ -frei	Gel	KCl 3,3 mol/l, Ag ⁺ -frei	
Membrane shape	Cylindrical	Cylindrical	Spear	Flat	Cylindrical	Flat	ISFET	
Membrane resistance at 25 °C (77 °F)	< 2 GΩ	< 800 MΩ	< 400 MΩ	< 1 GΩ	< 700 MΩ	< 500 MΩ	—	
Diaphragm	Cut	Cut	Hole	Split ring	Ceramic	Fiber	fritted polyethylene	
Shaft material	Glass	Glass	Noryl	Glass	Glass	Noryl	ABS	
Shaft length (±0.08 in./±2 mm)	6.69 in. (170 mm)	6.69 in. (170 mm)	2.56/0.98 in. (65/25 mm)	4.72 in. (120 mm)	1.57/3.15 in. (40/80 mm)	1.22/0.79 in. (31/20 mm)	3.39 in. (86 mm)	
Shaft Ø (±0.02 in./±0.5 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.59/0.02 in. (15/5 mm)	0.47 in. (12 mm)	0.47/0.02 in. (12/5 mm)	0.67/0.75 in. (17/19 mm)	0.67 ... 0.51 in. (17 ... 13 mm)	
Connection	Plug head	Plug head	Plug head	Plug head	Plug head	—	DIN	BNC
Electrode cable*	AS/DIN, AS/DIN-3, or AS/BNC					—	fixed cable (39.37 in./1 m)	
Electrode plug	Din plug or BNC, as selected					—	—	
Temperature sensor	—	—	—	—	—	NTC (30 KΩ)	NTC (30 KΩ)	

* not included

Calibration and Maintenance Supplies

All WTW Technical buffers are certified accurate and are NIST/DIN traceable

(see page 117, Services).

Buffer bottles from WTW

- Easy to dispense
- Easy to use
- Reliable calibration

Applicable buffers

	PL 4/7/9 DIN/NIST	APL 4/7/9 STAPL 4/7/9 DIN/NIST	TEP 4/7 Trace	TEP 10 Trace	TEP 10-	TPL 4/7 Trace	TPL 10 Trace	TPL 10
inoLab® 7xx/197i/Multi 350i	●	●	●	●	—	●	●	—
VARIO® pH	●	●	●	●	—	●	●	—
pH 315i, 330i, 340i, pH/ION 340i	●	●	●	●	—	●	●	—
pH/Cond 340i, pH/Oxi 340i, Multi 340i	●**	●**	●	●	—	●	●	—
inoLab® Level 1, 2, 3/pH 197	●	●	●	—	●	●	—	●
pH 330, 340, pH/ION 340	●	●	●	—	●	●	—	●
MultiLine P3/P4	—	—	●	—	●	●	—	●

Ordering informations for calibration and maintenance supplies see brochure "Product Details".

** not Multi 340i

Applications for SenTix® PLUS Electrodes

	● recommended by WTW ○ conditionally applicable – not recommended													
	SenTix® V	SenTix® 20 21-..., 22	SenTix® 41, 1-3, 42, RJS	SenTix® 51, 52	SenTix® 60, 61 62	SenTix® 81, 82	SenTix® 91, 92, L	SenTix® H	SenTix® HW, HWS	SenTix® Sp	SenTix® Sur	SenTix® Mic, MIC-D, MIC-B	SenTix® FET	SenTix® ORP, PtR, Ag, Au
Acids				○	●	●	●	○	○					Au, ORP*
Ammonia				○	○	○	○	●						
Aquarium water	●	●	●	●	○	○	○							ORP, PtR*
Beer				●	●	●	●	○					○	
Beverages				●	●	●	●	○	○				○	
Bleach solution				○	○	○	○	●						
Boiler feedwater					○	○	○		●					
Bread										●			●	
Cheese										●			●	
Coffee extract				○	●	●	●	○	●				●	
Condensate									●					
Cosmetics	○							○	●				●	
Deminerlized water									●					
Developer			RJS*		○	○	○	●	○					
Dispersion colors	○		RJS*					○	●					
Distilled water									●					
Drinking water	○	○	○	●	●	●	●	○	○					
Electroplating baths	○		RJS*	●	●	●	●	○	○					
Electroplating wastewater	●	●	●	○	○	○	○	○	○					○
Extracts				○	○	○	○	○	●					
Fixing baths			RJS*	○	○	○	○	●	●					ORP, PtR*
Fruit										●			●	
Fruit juice	○			●	●	●	●	○	○				○	
Groundwater		○	○	○	○	○	○		○					PtR*
Household cleansers	○	○	○	○	○	○	○	●	○					
Juice	○			○	○	○	○	○	○				○	
Leather	○										●			
Lemonade				●	●	●	●	○	○				○	
Lyes								●						
Margarine										●			●	
Meat										●			●	
Milk								○	●				○	
Mineral water	○	○	○	●	●	●	●	○	○				○	
Non-aqueous liquids				○	○	○	○		○					
Oil/water emulsions			RJS*					○	●					
Paint, water-soluble	○		RJS*					○	●				●	
Paper	○										●			
Paper extract				○	●	●	●							
Protein-containing liquids					●	●	●	○	●			MIC-D/-B*		
Rainwater				○	○	○	○		●					
Saliva	●										●	○	●	
Salt solutions	○	○	○	○	●	●	●	○	○					
Sausage										●			●	
Seawater				○	○	○	○	●	●					
Shampoo	○								●				●	
Skin	○										●			
Soil extract	●	●	●	●	○	○	○	○						
Solids (penetration)										●			○	
Solids (surface)	○										●			
Sulfide-containing liquids			RJS*					○	●					PtR*
Surface water	○	○	○	●	●	●	●	○	○					
Suspensions			RJS*					●	●					
Swimming pool water	●	●	●	●	○	○	○							
Tapwater	○	○	○	●	●	●	●	○	○					
Tris buffer solutions								●	●					
Vegetable juice	○	○	○	●	●	●	●	○	○				○	
Vegetables										●			●	
Wastewater	○	●	●	○	○	○	○							PtR*
Wine				●	●	●	●							
Yogurt	○	○	○	○	●	●	●			●			●	

** for ORP Measurement see page 20