- pH electrodes
- Conductivity cells
- ORP electrodes
- Ion-selective and gas sensitive electrodes
- Reference electrodes
- Electrode cables
- Buffers, electrolytes and cleaning solutions

Electrodes in motion – powered by Seven

METTLER TOLEDO

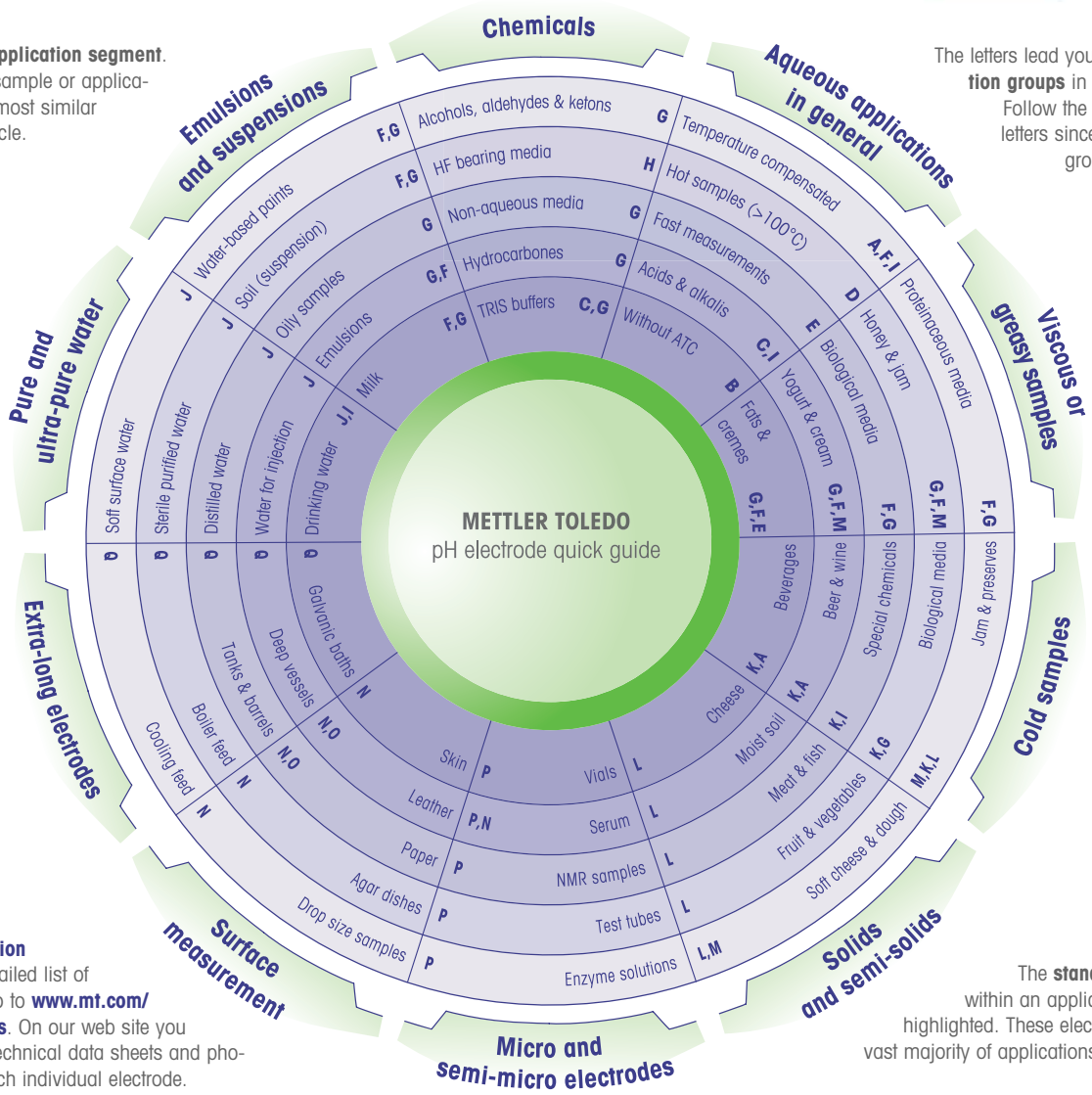
Content

INGOLD has been part of the METTLER TOLEDO group for over 18 years. Its name is synonymous with the success of combination pH-electrodes and for over 50 years has been committed to the manufacture of top quality electrochemical sensors throughout the world.

Quick and easy

Step 1
Choose your **application segment**. Look for your sample or application … or the most similar listed in the circle.

Step 2
The letters lead you to the **application groups** in the table below. Follow the sequence of the letters since the best suited group is listed first.



More Information
For a more detailed list of applications go to **www.mt.com/pHLab_sensors**. On our web site you will also find technical data sheets and photographs of each individual electrode.

Step 3
The **standard electrodes** within an application group are highlighted. These electrodes cover the vast majority of applications and should be looked at first.

Application Group «Universal Applications»

A **To measure pH and temperature**
InLab®404, **410**, 411, 430, 431, 432, 490, 1003, 1009, 1011, LE438

B **To measure pH**
InLab®405, 406, 407, 417, 408, 409, **412**, 420, 424

C **The glass classics**
InLab®408, 409, **410**, 411, **412**, 424, 430, 431, 432

D **With high temperature resistance**
HA425-60-S7/600, 265-VM-S7/120, 225-92-60-S7/120, 360-T-S7/120

E **The half-cells and ISFET probe**
InLab®201, 301, 302, 490

Application Group «Demanding Applications»

F **The multi purpose 3-in-1**
InLab®413–416, **418**, 419, 1010

G **With movable sleeve junction**
InLab®420, 425, HA405-60-88G-S7/120

H **HF resistant**
InLab®429, 265-VM-S7/120, 360-T-S7/120

I **The top generalist**
InLab®425

J **The sensitive (low membrane resistance)**
InLab®428, **433**, LoT402-611-S7/40

K **Designed for cold**
InLab®428

Application Group «Specific Applications»

L **The food specialist**
InLab®427

M **With triple diaphragm**
InLab®432, 404-T-S7/120

N **For surface measurements**
InLab®426, LoT403-M8-S7/120, 373-PF-S7120

O **The flat membrane specialist**
403-34-S7/165

P **Small diameters - fit anywhere**
InLab®421, 422, **423**, U402-M3-S7/200

Q **Extra-long shafts - reach far**
InLab®424, 430, **431**,1009, HA425-60-S7/600, HA405-60-M8-S7/400

Robust and cost effective

:: **pH electrodes for laboratory and field**

:: Robust polysulfone shaft

:: Maintenance free gel electrolyte

Replaceable ceramic junctions
The METTLER TOLEDO Replaceable Junction Tool (51340267) offers an economic alternative to open or movable sleeve junctions. This tool is used to replace the ceramic junction of the InLab®404 and 405 if it is contaminated. Using a simple technique you can easily replace an old junction with a new one in just a few seconds. The METTLER TOLEDO Set of Replaceable Junctions (51340268) provides you with 10 ceramic junctions to get started with. Sometimes something so simple can do so much ...

Designation	InLab®404	InLab®405	InLab®406	InLab®407	InLab®417	LE438
Order number	51340264	51340261	52000106	52000107	52000134	51340242
Application Group	**A**	**B**	**B**	**B**	**B**	**A**
Common specification	**pH-combination** pH-range: 0...14		Type of junction: Ceramic Shaft length: 120 mm		Membrane resistance (25°C): < 800 MΩ Shaft diameter: 12 mm	
Temperature range	0...100 °C	0...80 °C	0...80 °C	0...80 °C	0...80 °C	0...80 °C
Temperature probe	NTC 30 kΩ					NTC 30 kΩ
Shaft material	Polysulfone	Polysulfone	Polysulfone	Polysulfone	Polysulfone	Epoxy
Type of membrane glass	LR3	LR3	LR3	LR3	LR3	U
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	Gel	Gel	Gel	Gel
Cable and Connections	1.2 m, BNC/Cinch	S7	1.2 m; DIN 19262	1.2 m; BNC	S7	1.2 m; BNC/Cinch
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated

Artistry in glass

:: **pH glass electrodes**

:: Long-life ARGENTHAL™ reference

:: No contamination thanks to silver ion trap

Electrodes with ARGENTHAL™ and silver ion trap

A clean junction is absolutely essential if measurements are to be correct. The junction forms the contact between reference electrode and measured medium. If it is contaminated, the additional diffusion potentials will invalidate measurements. With its InLab® series of electrodes METTLER TOLEDO offers two ways to prevent this problem.

The electrolyte in conventional Ag/AgCl reference systems must be saturated with silver chloride. With critical media, e.g. those containing sulfides or proteins, this will result in the diaphragm being contaminated with silver sulfide. This cannot happen with InLab® electrodes, which have an ARGENTHAL™ lead-off and silver ion trap thus ensuring that the electrolyte remains absolutely free from silver ions.

Designation	**InLab®408**	**InLab®409**	**InLab®410**	**InLab®411**	**InLab®412**	**InLab®412/170**
Order number	52000110	52000111	52000118	52000119	52000112	52000388
Application Group	**C, B**	**C, B**	**C, A**	**C, A**	**B, C**	**B, C**
Common specification	**pH-combination** pH-range: 0...14	Shaft material: Glass Type of junction: Ceramic Reference System: ARGENTHAL™ with Ag^+-trap			Reference electrolyte: 3 mol/L KCl Shaft diameter: 12 mm Storage: 3 mol/L KCl	
Temperature range	0...80 °C	0...80 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C
Temperature probe			NTC 30 kΩ	Pt1000		
Type of membrane glass	LR3	LR3	HA	HA	HA	HA
Membrane resistance (25°C)	< 500 MΩ	< 500 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ
Cable and Connections	1.2 m; DIN 19262	1.2 m; BNC	MultiPin	MultiPin	S7	S7
Shaft length	120 mm	120 mm	120 mm	120 mm	120 mm	170 mm

Black beauty

:: **pH electrodes with built-in temperature probe**

:: Polymer electrolyte with open junction

:: Long-life ARGENTHAL™ reference

:: Resistant PEEK shaft

Electrodes with polymeric electrolyte Xerolyt®

The fine-pored ceramic junction used in conventional electrodes can easily become contaminated in critical media such as suspensions and wastewater. In contrast InLab® electrodes with a solid polymeric electrolyte require no junction at all. As a result these sensors are particularly insensitive to contamination. The reference electrode on these sensors is in direct contact with the measured medium by means of an open connection, hence there is no junction to block.

Designation	**InLab®413**	**InLab®414**	**InLab®415**	**InLab®416**	**InLab®418**	**InLab®419**
Order number	52000100 51340288 (SG) 52340276 (2m)	52000101	52000102 52000380 (IP67)	52000103	52000104	52000105
Application Group	**F**	**F**	**F**	**F**	**F**	**F**
Common specification	**pH-combination** pH-range: 0...14 Shaft material: PEEK		Type of junction: Open junction Reference system: ARGENTHAL™ Reference electrolyte: Xerolyt® Polymer		Shaft length: 120 mm Shaft diameter: 12 mm Storage: FRISCOLYT-B™ (51340053)	
Temperature range	0...60 °C	0...60 °C	0...60 °C	0...60 °C	0...100 °C	0...100 °C
Temperature probe	NTC 30 kΩ	NTC 30 kΩ	Pt1000	Pt1000	NTC 30 kΩ	Pt1000
Type of membrane glass	U	U	U	U	LR3	LR3
Membrane resist. (25°C)	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 700 MΩ	< 700 MΩ
Cable and Connections	1.2 m; BNC/Cinch 2.0 m for SG / 2m	1.2 m; DIN 19262/ Cinch	1.2 m; DIN 19262/ 4 mm banana	1.2 m; BNC/ 4 mm banana	MultiPin	MultiPin

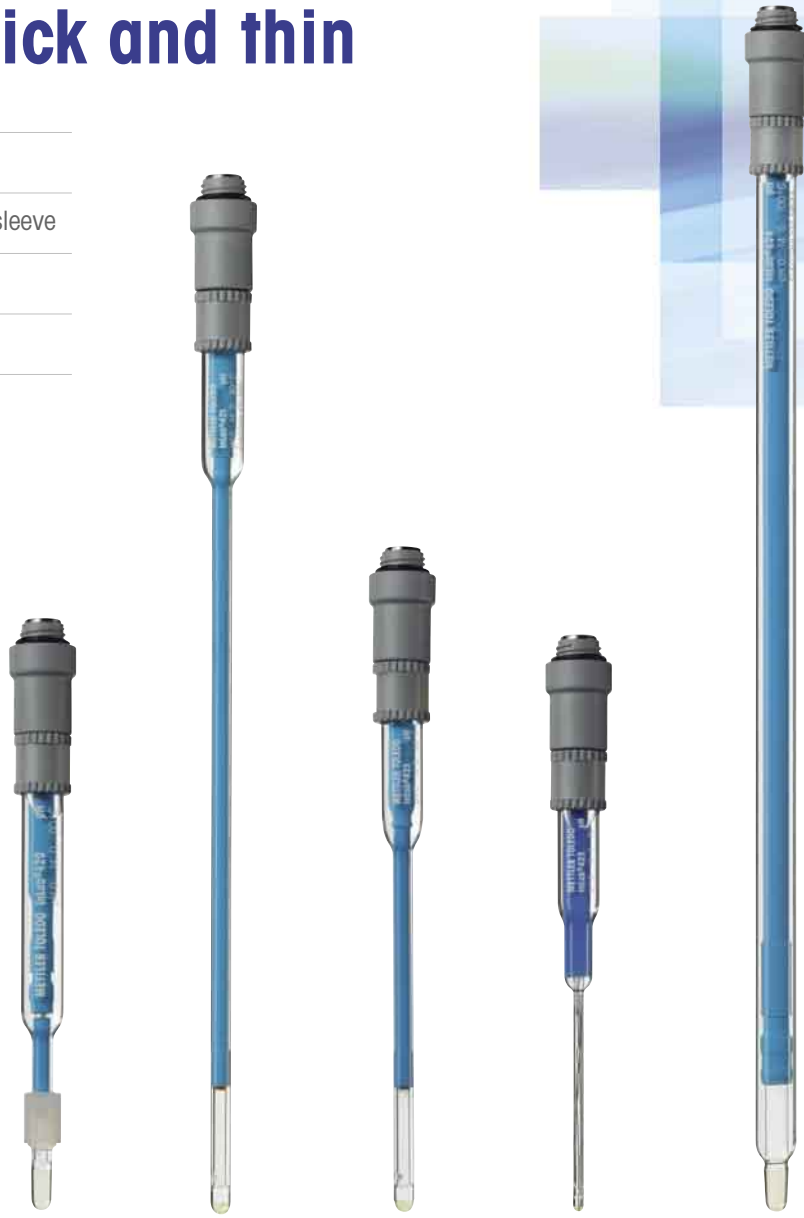
Through thick and thin

:: Lab speciality electrodes

:: pH electrode with movable sleeve

:: pH micro-electrode

:: pH semi-micro electrodes



Designation	**InLab®420**	**InLab®421**	**InLab®422**	**InLab®423**	**InLab®424**
Order number	52000113	52000122	52000123	52000124	52000114
Application Group	**G**	**P**	**P**	**P**	**B, C, Q**
Common specification	**pH-combination**	pH-range: 0...14	Shaft material: Glass	Cable and connections: S7	
Temperature range	0...60 °C	0...80 °C	0...80 °C	0...80 °C	0...100 °C
Type of membrane glass	HA	U	U	U	HA
Membrane resistance (25°C)	< 600 MΩ	< 300 MΩ	< 300 MΩ	< 1000 MΩ	< 600 MΩ
Type of junction	Movable PTFE-sleeve	Ceramic	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™ with Ag^+-trap	Ag/AgCl	Ag/AgCl	Ag/AgCl	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl
Shaft length	120 mm	200 mm	100 mm	60 mm	300 mm
Shaft diameter	12 mm	6 mm	6 mm	3 mm	12 mm
Storage	3 mol/L KCl	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl AgCl saturated	3 mol/L KCl

Nothing is impossible

- **:: pH electrode with movable sleeve**
- :: Flat membrane and puncture electrodes
- :: HF and cold resistant electrodes
- :: Electrodes with triple diaphragm
- :: Electrodes with bridge electrolyte
- :: Electrode for ultra pure water
- :: pH specialists with temperature probe
- :: ISFET electrode

Designation	InLab®425	InLab®426	InLab®427	InLab®428	InLab®429
Common specifications	**pH-combination**				
Order number	51340253	52000108	52000109	52000116	52000117
Application Group	**G, I**	**N**	**L**	**J, K**	**H**
pH range	0...12	1...11	2...11	1...11	1...11
Temeperature range	0...60 °C	0...50 °C	0...80 °C	-30...80 °C	0...80 °C
Temperature probe	NTC 30 kΩ				
Shaft material	Glass	Polysulfon	Glass	Glass	Glass
Type of membrane glass	A41	LoT	LoT	LoT	HF
Membrane resistance (25°C)	< 600 MΩ	< 800 MΩ	< 250 MΩ	< 50 MΩ	< 100 MΩ
Type of junction	Movable PTFE sleeve	Ceramic ring	Open junction	Triple ceramic	Ceramic
Reference system	ARGENTHAL™ with Ag^+-sleeve	Ag/AgCl	ARGENTHAL™	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	3 mol/L KCl	3 mol/L KCl AgCl saturated	Xerolyt® PLUS polymer	FRISCOLYT-B™ (51340053)	3 mol/L KCl
Bridge electrolyte	3 mol/L KCl				
Cable and connections	MultiPin	S7	S7	S7	S7
Shaft length	170 mm	120 mm	25 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	6 mm	12 mm	12 mm
Storage	3 mol/L KCl	3 mol/L KCl AgCl saturated	FRISCOLYT-B™ (51340053)	FRISCOLYT-B™ (51340053)	3 mol/L KCl

Quick response thanks to EQUITHAL®
Temperature changes cause unstable potentials at the lead-off elements. As a consequence, the response time of electrodes is prolonged. In conventional glass electrodes the various elements experience the change at different times, which makes the response behavior even worse.
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 and reference potentials stabilize rapidly and simultaneously. The EQUITHAL® technology by METTLER TOLEDO guarantees shortest response times despite large changes in temperature.

InLab®430	InLab®431	InLab®432	InLab®433	InLab®490
52000120	52000121	51340254	51340255	51302305
A, C, Q	**A, C, Q**	**A, C, M**	**J**	**A, E**
0...14	0...14	0...14	1...11	0...14
0...100 °C	0...100 °C	0...100 °C	0...80 °C	0...60 °C
Pt1000	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ
Glass	Glass	Glass	Glass	ABS
HA	HA	HA	LoT	ISFET
< 600 MΩ	< 600 MΩ	< 600 MΩ	< 50 MΩ	
Ceramic	Ceramic	Triple ceramic	Triple ceramic	Porous PTFE
ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	driTEK
3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	Gel
			3 mol/L KCl	
MultiPin	MultiPin	MultiPin	MultiPin	1.2 m; Mini-DIN
300 mm	300 mm	170 mm	170 mm	160 mm
12 mm	12 mm	12 mm	12 mm	10 mm
3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	Dry

Golden rule

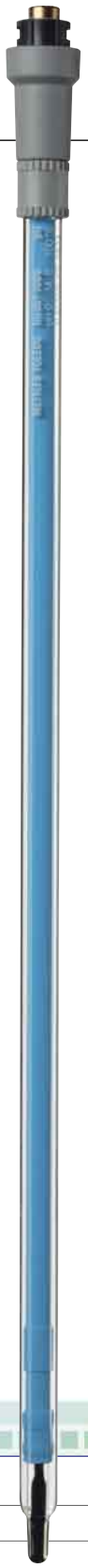
:: **pH specialists with temperature probe**

:: Electrodes that fit Process instruments

:: Gold-plated plugs

Complementary and felxible

The InLab®1000 series has been developed to cover special applications. These electrodes are equipped with Pt1000 temperature probes and have gold plated plugs. This makes them ideal for extreme precision measurements. A good example of the versatility offered by InLab electrodes are the Inlab®1010 and InLab®1011. These electrodes fit METTLER TOLEDO portable Process instruments.

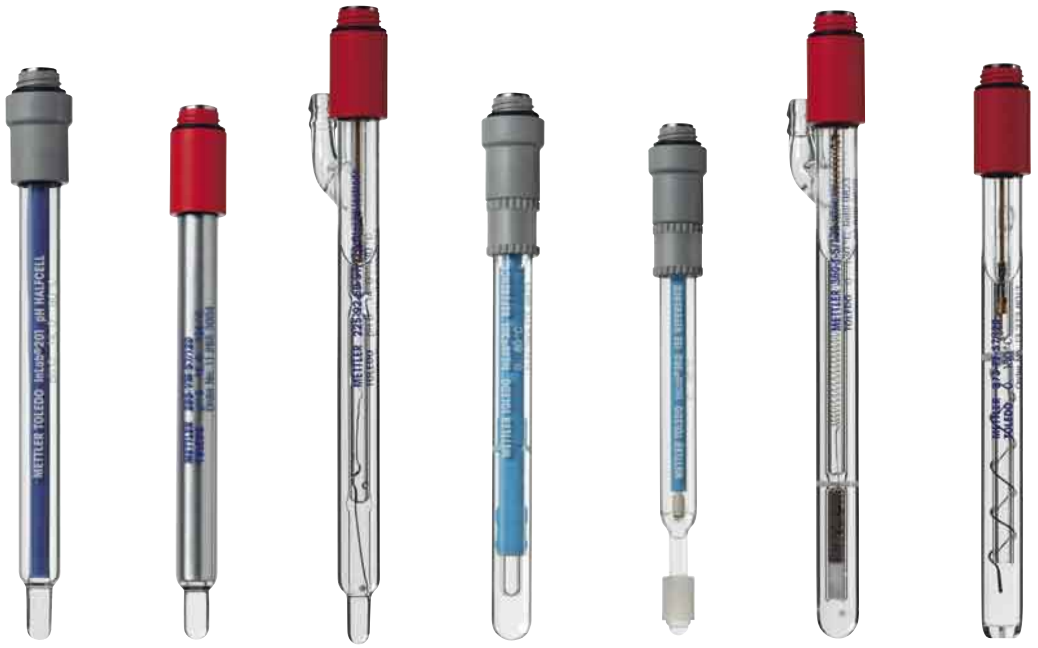


Designation	**InLab®1003**	**InLab®1009**	**InLab®1010**	**InLab®1011**
Order number	52000386	52000415	52000497	52000498
Application Group	**A**	**A**	**F**	**A**
Commmon specifications	**pH-combination**	pH range: 0...14 Temperature probe: Pt1000		Shaft diameter: 12 mm Storage: 3 mol/L KCl
Temeperature range	0...100 °C	0...100 °C	0...80 °C	0...80 °C
Shaft material	Glass	Glass	PEEK	Glass
Type of membrane glass	HA	HA	LR3	HA
Membrane resistance (25°C)	< 600 MΩ	< 600 MΩ	< 900 MΩ	< 600 MΩ
Type of junction	Ceramic	Ceramic	Open junction	Ceramic
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	Polymer	3 mol/L KCl
Cable and connections	1.2 m; DIN 19262/ 4 mm banana gold-plated	MultiPin	1.2 m; DIN 19262/ 4 mm banana gold-plated	1.2 m; DIN 19262/ 4 mm banana gold-plated
Shaft length	170 mm	400 mm	110 mm	110 mm

Useful helpers

:: **pH half-cells**

:: Reference electrodes



Designation	**InLab®201**	**265-VM-S7/120**	**225-92-60-S7/120**	**InLab®301**	**InLab®302**	**360-T-S7/120**	**373-PF-S7/120**
Type of electrode	**pH-half-cell**	**pH-half-cell**	**pH-half-cell/ electrol. bridge**	**Refernce electrode**	**Refernce electrode**	**Refernce electrode**	**Flat membrane ref. electrode**
Order number	52000127	59904513	59902540	52000128	52000129	59902720	59905169
Former Order Number		112653004	102253035			103603056	133738013
Application Group	**E**	**D, H**	**D**	**E**	**E**	**D, H**	**N**
Commmon specifications	Shaft material: Glass		Cable and connections: S7		Shaft length: 120 mm		Shaft diameter: 12 mm
pH range	0...14	0...12	0...12				
Temeperature range	0...80 °C	0...130 °C	0...130 °C	0...80 °C	0...60 °C	0...130 °C	0...80 °C
Type of membrane glass	LR3	A41thick-walled	A41				
Membrane resistance (25°C)	< 500 MΩ	< 700 MΩ	< 600 MΩ				
Type of junction				Ceramic	Movable PTFE sleeve	Triple ceramic	Ceramic
Reference system				ARGENTHAL™ with Ag^+-trap	Ag/AgCl	ARGENTHAL™	Ag/AgCl
Reference electrolyte				3 mol/L KCl	Gel	3 mol/L KCl	3 mol/L KCl AgCl saturated
Bridge electrolyte					3 mol/L KCl		
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl				

Sensory elegance

:: **Up to 600 mm in length**

:: Flat membrane electrodes

:: 200 mm micro electrode

:: Movable glass sleeve

:: Puncture electrodes

Designation	**HA405-60-88G-S7/120**	**404-T-S7/120**	**LoT403-M8-S7/120**	**HA425-60-S7/600**	**U402-M3-S7/200**
Order number	59904644	59903001	59902993	59904764	59904572
Former Order Number	114053053	104043070	104033199	114253000	114023009
Application Group	**G**	**M**	**N**	**D, Q**	**P**
Commmon specifications	**pH-combination**	Shaft material: Glass		Cable and Connections: S7	
pH range	0...14	0...12	1...11	0...14	0...14
Temeperature range	0...100 °C	0...80 °C	0...80 °C	0...130 °C	0...80 °C
Type of membrane glass	HA	A41	LoT	HA	U
Membrane resistance (25°C)	< 600 MΩ	< 400 MΩ	< 1000 MΩ	< 600 MΩ	< 1000 MΩ
Type of junction	Movable glass sleeve	Triple Ceramic	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™	Ag/AgCl	Ag/AgCl	ARGENTHAL™	Ag/AgCl
Reference electrolyte	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
Shaft length	120 mm	120 mm	120 mm	600 mm	200 mm
Shaft diameter	12 mm	12 mm	8 mm	12 mm	3 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

Seven types of membrane glass

The glass membrane of a pH-electrode is the real heart of the sensor. METTLER TOLEDO has developed special glass of the required quality for the various applications:

HA glass	high-alkali glass for use at high temperatures and high pH-values; extremely low alkali errors; extremely robust cylindrical membranes
LoT glass	low-resistant glass for use at low temperatures (LoT = low temperature), also perfectly suitable for low ion concentrations (ultra pure water)
A41 glass	particularly resistant to chemicals; suitable for temperatures up to 130°C
U glass	universal glass, suitable for standard applications
LR3 glass	low-resistance glass (LR = low resistance), specially designed for smaller membranes
HF glass	resistant against hydrofluoric acids
Na glass	Sodium-sensitive Glass; specific to the Sodium electrode

403-34-S7/165	**HA405-60-M8-S7/400**	**LoT402-611-S7/40**	**Flow-through cell for electrode LoT402-611**
59902985	51340262	59902917	59904354
104033178		104023528	106111000
O	**Q**	**J**	**J**
0...12	0...14	1...11	
0...80 °C	0...100 °C	0...80 °C	
A41	HA	LoT	
< 2000 MΩ	< 600 MΩ	< 250 MΩ	Flow-through cell for electrode LoT402-611, thermostatable
4 ceramic	Ceramic	Double ceramic	
Ag/AgCl	ARGENTHAL™	Ag/AgCl	
3 mol/L KCl AgCl saturated	3 mol/L KCl	3 mol/L KCl AgCl saturated	Measuring volume 0.5 mL
165 mm	400 mm	40 mm	
12 mm	8 mm	7 mm	
3 mol/L KCl AgCl saturated	3 mol/L KCl	3 mol/L KCl AgCl saturated	

High potentials

:: **Platinum, gold and silver electrodes**

:: Electrodes with movable sleeve

:: Micro electrode

:: Metal half-cells

Designation	InLab®501	InLab®501/170	InLab®502	InLab®503	Pt4805-60-88TE-S7/120
Type of electrode	**kombinierte Metallelektrode**				
Order number	52000130	51340256	51340257	51340258	59904187
Former order number					105053319
Commmon specifications	Cable and Connections: S7				
Temeperature range	0...80 °C	0...80 °C	0...80 °C	0...80 °C	0...60 °C
Shaft material	Glass	Glass	Glass	Glass	Glass
Type of junction	Ceramic	Ceramic	Ceramic	Ceramic	Movable PTFE sleeve
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO_3	3 mol/L KCl
Shaft length	120 mm	170 mm	120 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm
Metall	Platinum ring	Platinum ring	Gold ring	Silver ring	Platinum ring
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO_3	3 mol/L KCl

Seven combined ORP electrodes

METTLER TOLEDO makes it possible. With the seven combined ORP electrodes and the four metal half-cells, the full spectrum of ORP and redox applications are covered. The measuring signal is produced on the surface of the precious metal by an exchange of electrons with the oxidation-reduction-system of the measured 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 (chloride determination).

Au4825-60-88G-S7/120	Pt4800-M5-S7/80	Pt805-S7/120	Au805-S7/120	Ag805-S7/120	Ag850-S7/120
		Metall-Halbzelle			
59905045	59909344	59904377	59904381	59904391	59904408
115253004	105003096	108053117	108053121	108053152	108503079
0...130 °C	0...80 °C	-30...130 °C	-30...130 °C	-30...130 °C	-30...80 °C
Glass	Glass	Glass	Glass	Glass	Polypropylen
Movable glass sleeve	Ceramic				
ARGENTHAL™	Ag/AgCl				
3 mol/L KCl	3 mol/L KCl AgCl saturated				
120 mm	80 mm	120 mm	120 mm	120 mm	120 mm
12 mm	5 mm	12 mm	12 mm	12 mm	12 mm
Gold ring	Platinum pin	Platinum ring	Gold ring	Silver ring	Silver tip
3 mol/L KCl	3 mol/L KCl AgCl saturated	Dry	Dry	Dry	Dry

Ions in motion

:: **Laboratory conductivity cells**

:: Cells for ultra pure water

:: Cells for field measurement

Designation	**InLab®710**	**InLab®720**	**InLab®730**	**InLab®740**	**950-K19/ 120/1m/2x-27.4**
Type of electrode	**Conductivity cell**				
Order number	51302256	51302255	51302119	51340260	59904438
Former order number					109503000
Compatibility	**METTLER TOLEDO SevenEasy™ and SevenMulti™**				
Commmon specifications	Shaft length: 120 mm		Shaft diameter: 12 mm		
Measuring range	0.01...500 mS/cm	0.1...500 µS/cm	0.01...1000 mS/cm	0.001...500 µS/cm	
Temeperature range	0...100 °C	0...100 °C	0...100 °C	0...70 °C	0...60 °C
Shaft material	Glass	Glass	Epoxy	PVC/Steel V4A	Polysulfon
Cell constant	0.56	0.06	0.56	0.08	1.00
Cell type	4 platinum poles	2 platinum plates	4 graphite poles	2 steel poles	2 platinum poles
Cable and connections	1 m; Mini-Din	1 m; Mini-Din	1 m; Mini-Din	1 m; Mini-Din	1 m; 4 mm banana

Automatic temperature compensation in the field of conductivity measurement

The conductance of a solution rises with increasing temperature. This effect must be compensated for in any conductivity determination. By using conductivity cells with integrated temperature sensors this compensation is easily accomplished (InLab®710 to 740). Most conductivity measurements are referenced either to 20°C or 25°C.

In conjunction with METTLER TOLEDO meters this compensation can be made automatically. All the conductivity cells in the InLab® range have been designed for use in laboratory applications.

For more accurate measurements in ultra pure water the glass flow- through cell should be used. (Order number 51302257)

980-0.1-K19/ 120/1m/2x-27.4	980-K19/ 120/1m/2x-27.4	980-10-K19/ 120/1m/2x-27.4	InLab®737 2 m Kabel (IP67)	InLab®737 / 10m 10 m Kabel (IP67)
59904440	59904442	59904448	51340277	51340278
109803002	109803007	109803025		
Instruments from other manufacturers			**METTLER TOLEDO SevenGo™**	
Measuring range depends on instrument model			0.05...1000 mS/cm	0.05...1000 mS/cm
0...80 °C	0...80 °C	0...80 °C	0...105 °C	0...105 °C
Glass	Glass	Glass	Epoxy	Epoxy
0.10	1.00	10.0	0.56	0.56
2 platinum poles	2 platinum poles	2 platinum poles	4 graphite poles	4 graphite poles
1 m; 4 mm banana	1 m; 4 mm banana	1 m; 4 mm banana	2 m; LTW	10 m; LTW

Precise determinations

:: **Ion-selective half-cells**

:: **ISE with built in reference**

DX series

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 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. This way you can just as easily use your ISE with a titrator as with an ion-meter. Every time you change the membrane module you simply change your ID ring.

Designation	**DX207-Li^+**	**DX218-NH_4^+**	**DX219-F^-**	**DX223-Na^+**	**DX224-Mg^{2+}**	**DX226-CN^-**	**DX232-S_2^-**	**DX235-Cl^-**
Type of electrode	**Ion-selective half-cells**							
Order number electrodes	51107673	51340900	51340500	51340263	51107684	51107681	51107675	51340400
Order number membrane kit	51107687	51340012	51340008		51107698	51107695	51107689	51340007
Order number elektrolyt	51107881	51340035	51340031		51107885	51107893	51107894	51340030
Shaft material	POM / PVC	POM / PVC	POM	Glass	POM / PVC	POM	POM	POM
Optimal pH range	2…12	2…9	4…10	8…11	4…12	4…13	4…13	2…13
Designation		**DC218-NH_4^+**	**DC219-F^-**					**DC235-Cl^-**
Type of electrode	**Ion-selective electrodes with built-in reference**							
Order number		51340910	51340510					51340410
Shaft material		Epoxy	Epoxy					Epoxy
Optimal pH range		4…10	5…8					2…12
Commmon specifications	The following specifications are applicable to both electrode series							
Type of membrane	Polymer	Polymer	Solide state	Na-Glass	Polymer	Solide state	Solide state	Solide state
Measuring range	$10^0…10^{-5}$ mol/L	$10^0…10^{-5}$ mol/L	$10^0…10^{-6}$ mol/L	$10^0…10^{-7}$ mol/L	$10^0…10^{-5}$ mol/L	$10^0…10^{-5}$ mol/L	$10^0…10^{-6}$ mol/L	$10^0…10^{-5}$ mol/L
Temperature range	0…50 °C	0…50 °C	0…80 °C	0…80 °C	0…50 °C	0…80 °C	0…80 °C	0…80 °C
Electrolyte for reference electrode	3 mol/L KCl	2 mol/L $MgSO_4$	3 mol/L KCl	3 mol/L KCl	2 mol/L $MgSO_4$	1 mol/L KNO_3	1 mol/L KNO_3	1 mol/L KNO_3
ISA-solution (ionic strength adjuster)	0.5 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$	TISAB III	0.9 mol/L $Al_2(SO_4)_3$	1 mol/L Tris-2 HCl	10 mol/L NaOH	10 mol/L NaOH	1 mol/L KNO_3

DC series

The perfect quality

Each ion-selective electrode (ISE) and each membrane module is tested wet-chemically. 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 are shipped assembled, just the way they were tested before. Therefore, they are filled with electrolyte and ready for use.

DX239-K^+	**DX240-Ca^{2+}**	**DX258-SCN^-**	**DX262-NO_3^-**	**DX264-Cu^{2+}**	**DX280-Br^+**	**DX287-BF_4^-**	**DX312-Cd^{2+}**	**DX327-I^-**	**DX337-Ba^{2+}**	**DX407-Pb^{2+}**
51340700	51340600	51107870	51340800	51107678	51340300	51107676	51107672	51107680	51107674	51107873
51340010	51340009	51107871	51340011	51107692	51340006	51107690	51107686	51107694	51107688	51107874
51340033	51340032	51107872	51340034	51107889	51340029	51107890	51107891	51107898	51107892	51107875
POM / PVC	POM / PVC	POM	POM / PVC	POM	POM	POM / PVC	POM / PVC	POM	POM / PVC	POM / PVC
2…12	2…12	2…10	2…12	2…8	2…13	2…12	2…8	1…13	2…12	2…8
DC239-K^+	**DC240-Ca^{2+}**		**DC262-NO_3^-**		**DC280-Br^+**					
51340710	51340610		51340810		51340310					
Epoxy	Epoxy		Epoxy		Epoxy					
2…12	3…10		2…11		2…12					
Polymer	Polymer	Solide state	Polymer	Solide state	Solide state	Polymer	Polymer	Solide state	Polymer	Polymer
10^0…10^{-6} mol/L	10^0…10^{-6} mol/L	10^0…10^{-5} mol/L	10^0…10^{-5} mol/L	10^0…10^{-5} mol/L	10^0…10^{-6} mol/L	10^0…10^{-6} mol/L	10^0…10^{-5} mol/L	10^0…10^{-6} mol/L	10^0…10^{-5} mol/L	10^0…10^{-5} mol/L
0…50 °C	0…50 °C	0…80 °C	0…50 °C	0…80 °C	0…80 °C	0…50 °C	0…50 °C	0…80 °C	0…50 °C	0…50 °C
2 mol/L $MgSO_4$	2 mol/L $MgSO_4$	1 mol/L KNO_3	2 mol/L $MgSO_4$	1 mol/L KNO_3	1 mol/L KNO_3	2 mol/L $MgSO_4$	1 mol/L KNO_3	1 mol/L KNO_3	3 mol/L KCl	1 mol/L KNO_3
0.5 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$	1 mol/L KNO_3	0.5 mol/L $MgSO_4$	1 mol/L KNO_3	1 mol/L KNO_3	0.5 mol/L $MgSO_4$	1 mol/L KNO_3	1 mol/L KNO_3	1 mol/L Tris-2 HCl	1 mol/L KNO_3

Volatile values

:: Gas sensitive electrodes

:: Oxygen sensors

The best of the best

The InLab®605 DO sensor incorporates the newest technology in polarographic dissolved oxygen determination. There are certain applications in which such sensors need to be rugged enough to withstand harsh conditions in factories, laboratories or out in the field. For this reason the membrane is protected by a steel mesh and the shaft is made out of glass fiber reinforced PPS (polyphenylene sulfide). With the InLab®605 dissolved oxygen sensor you will find the high accuracy and reproducibility that you have come to trust with METTLER TOLEDO products.

Saves time and money

Ion selective and gas sensitive electrodes allow the quick and easy determination of concentration and activity of a variety of dissolved ions and gases. By comparison, analysis by conventional wet-chemical methods can be complicated and time consuming.

Designation	Ammonia	Nitrogen oxides	Carbon dioxide	InLab®605 2 m cable	InLab®605 / 10m 10 m cable
Type of electrode	**Gas sensitive electrodes**			**Oxygen sensors**	
Order number electrodes	51341000	51341100	51341200	51340291	51340292
Order number membrane kit	51340013	51340014	51340015	51340293	51340293
Order number elektrolyt	51340036	51340037	51340038	51340294	51340294
Commmon specifications	Shaft material: PPS				
Measuring range	$5 \cdot 10^{-2} \ldots 10^{-6}$ mol/L	$10^{-2} \ldots 10^{-4}$ mol/L	$5 \cdot 10^{-2} \ldots 10^{-6}$ mol/L	0...200 % 0...20 mg/L	0...200 % 0...20 mg/L
Temperature range	0...50 °C	0...50 °C	0...50 °C	0...60 °C	0...60 °C
Optimal pH range	> 11	< 5	< 2		
Interferences	Volatile bases	SO_2, CO_2, H_2S	SO_2, NO_x, H_2S		

Amazing solutions

Buffers, Standards	pH-Value 25 °C	Order no 250 mL	Order no 6 x 250 mL	Order no 1000 mL	Order no 30 sachets 20 ml
Standard-pH-buffer solutions	2.00	51340055			
	4.01	51340057	51340058	51340228	51302069
	7.00	51340059	51340060	51340229	51302047
	9.21	51300193	51300194	51340230	51302070
	10.00	51340056	51340231	51340232	51302079
	11.00	51340063			
	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
pH-buffer solutions NIST and DIN 19266	4.006	51340039			
	6.865	51340041			
	9.180	51340042			
	10.012	51340044			
	E (Ag/AgCl) 25 °C		Order no 250 mL	Order no 6 x 250 mL	Order no 6 x 30 mL
Redox-buffer solutions	220 mV U_H = 427 mV		51340065	51340081	
	468 mV U_H = 675 mV				51340066

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**

Solutions for ion-selective measurement	Order number 250 mL	Order number 6 x 250 mL
Bridge Electrolytes		
1 mol/L KNO_3	51340047	51340234
3 mol/L KCl	51340049	51340050
ISA Solutions		
TISAB 3, for determinations of Fluoride	51340064	
0.9 mol/L $Al_2(SO_4)_3$	51340072	
Electrolytes for reference electrodes	Order number 250 mL	Order number 6 x 250 mL
KCl-solution 3 mol/L, AgCl saturated, for Ag/AgCl-Reference System	51340045	51340046
KCl-solution 3 mol/L	51340049	51340050
FRISCOLYT-B™, for measurement at low temperature and for media with organic compounds (oil, proteins)	51340053	51340054
LiCl-solution 1 mol/L in ethanol for measurement in non-aqueous media	51340052	
Cleaning solutions	Order number 250 mL	Order number 6 x 250 mL
Pepsin-HCl for cleaning junctions with protein contamination. Treatment time about 1 h.	51340068	51340069
Thiourea solution for cleaning junctions with silver sulfide contamination. Treatment until clean.	51340070	51340082
Reactivation solution for regeneration of glass electrodes. Treatment time about 1 min. (25 ml)	51340073	

Conductivity standards	Order number 500 mL	Order number 6 x 250 mL	Order number 250 mL	Order number 30 sachets 20 ml
84 µS/cm	51302153			
1413 µS/cm		51300259	51300138	51302049
12.88 mS/cm		51300260	51300139	51302050

The right connections

Connection	Lenght	Designation	Plug	Socket on the meter	Order number
 MultiPin	1.2 m	BNC/Cinch			52300009
	2.5 m	BNC/Cinch			51340290
	1.2 m	BNC/1x4 mm			52300011
	1.2 m	BNC/Cinch			52300007
	1.2 m	DIN/1x4 mm			52300005
 S7 grey	1.2 m	BNC			52300004
	1.2 m	DIN			52300001
	1.2 m	DIN gold plated			52300036
	1.2 m	Radiometer			52300013
	1.2 m	US-Standard			52300014
	1.2 m	BNC (IP67)			52300046
	1.2 m	No connector			52300025
	5.0 m	DIN gold plated			523000037
	5.0 m	No connector			52300002
 For reference electrodes	1.2 m	4 mm banana			52300015
	1.2 m	2 mm banana			52300016

Connection	Lenght	Designation	Plug	Socket on the meter	Order number
 **S7 red**	1.0 m	BNC			59902392
	1.0 m	DIN			59902382
	1.0 m	4 mm banana			59902434
	1.0 m	Radiometer			59902390
	3.0 m	BNC			59902417
	3.0 m	DIN			59902408
	3.0 m	Radiometer			59902416
	3.0 m	No connector			59902414
	5.0 m	BNC			59902427
	5.0 m	DIN			59902425
	10.0 m	No connector			59902431

accessories	Description	Order number
Wettingcaps (minimum order amount 5 units)	for electrodes with 12 mm shaft diameter	59900362
	for electrodes with movable sleeve junction	59900363
	for electrodes with 8 mm shaft diameter and InLab®427	59900364
	for electrodes with 6 mm shaft diameter	52000442
	for electrodes with 3 mm shaft diameter	52000443
Separate temperature sensors in stainless steel tube (steel 316)	NTC 30 kΩ Laboratory temperature sensor (120 x 3 mm)	51300164
	Pt1000 Laboratory temperature sensor (120 x 3 mm)	51300165
	IP67 temperature sensor for MP120/125/MA130 (120 x 3 mm)	51302034
	IP67 Puncture temperature sensor for MP120/125/MA130	51302036

METTLER TOLEDO
– a world of possibilities ...

... everything and much more

The innovative electronic engineering of the Seven line has been combined with INGOLD's 50 years of experience in producing electrochemical sensors.

METTLER TOLEDO is a system supplier for pH, conductivity, dissolved oxygen and ion measurements:

- Seven – State of the art range of instruments
- Comprehensive range of electrodes
- Useful accessories

Quality certificate. Development, production and testing according to ISO 9001. Environmental management system according to ISO 14001.

Worldwide service. Our extensive service network is among the best in the world and ensures maximum availability and service life of your product.

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

On the Internet. You will quickly find lots of essential information about our products, our services, and our company at

www.mt.com

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gone global...

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