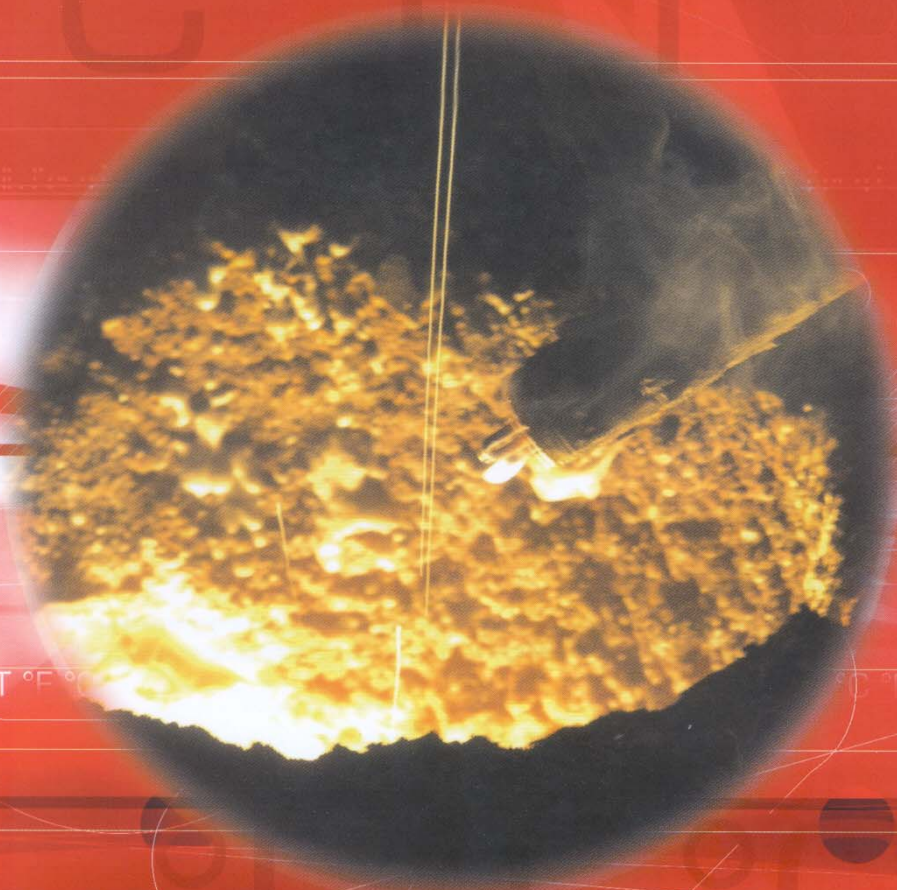


Heraeus

Positherm[®] and
Positherm[®] Non-Splash



The masters when it comes
to control techniques



Electro-Nite

The knowledge of liquid metal temperature is essential for the production and quality control of steel, cast iron and non-ferrous alloys. The molten metal temperature must be within strict limits to achieve the optimum quality before the heat or melt can be tapped or cast.

Thermoelectric temperature measurements with noble metal thermocouples immersed in the molten metal bath provide the best solution to meet the user's requirements.

Positherm[®] disposable immersion thermocouple



Dedication to the highest standards of accuracy and reliability has made Heraeus Electro-Nite the world's largest maker of immersion thermocouples. Designed and manufactured for total customer satisfaction, Heraeus Electro-Nite's Positherm[®] immersion thermocouples are the most economical and effective way to measure liquid metal temperature with the highest accuracy, reproducibility and reliability. Supplied as ready-made units, Positherm[®] expendable thermocouples are easy to use and require no special skill from the operator. They are available in various types to meet the specific requirements of different applications.

CALIBRATION

Positherm® thermocouples are available in following calibrations according to IEC 584-1 and JIS C 1602/1981 standards based on the IPTS 68 temperature scale:

Pt 10 % Rh / Pt (type S), temperature range: – 50 to 1767 °C

Pt 13 % Rh / Pt (type R), temperature range: – 50 to 1767 °C

Pt 30 % Rh / Pt 6 % Rh (type B), temperature range: 0 to 1820 °C

The thermocouple wires are rigorously selected in order to guarantee an accuracy of 0 to + 3 °C at 1554 °C (Pd melting point).

CARDBOARD TUBE LENGTHS

To suit different applications, Positherm® thermocouples are available in several nominal lengths ranging from 150 to 1700 mm. For application in big vessels, the use of telescopic oversleeves is recommended to provide an additional thermal protection of the immersion lance.

METAL CAPS

A metal cap protects the thermocouple assembly during transport and immersion through the slag. It is made of steel for application in steel melts. For application in low temperature steel, cast iron and aluminium alloys, an aluminium protection cap is used. A copper cap is used for measurements in copper alloys.

COMMON FEATURES

- Measuring time: 3 to 6 s.
- Maximum immersion time: 7 s at 1650 °C
- Diameter of protective cardboard tube:
 - inner: 17.9 mm
 - outer: 29.5 mm
- Packing: 50 units per box, except for 150 mm long cardboard tube: 100 units per box.

METHOD OF USE

The Positherm® thermocouple is pushed upon the probe holder of a suitable immersion lance until electrical contact is achieved with a built in contact block. An inner and outer extension cable related to the thermocouple type connects the immersion lance to the measuring instrument (e.g. Digitemp, Digitemp-E and Digilance IV). Details about temperature measuring instruments can be found in the relative brochures. Next, the thermocouple is dipped into the molten metal until the end of measurement signal is given by the instrumentation.

APPPLICATION FIELD

Molten metal temperature measurement in the blast furnace runner, torpedo car, converter, electric furnace, ladle, tundish, mould, foundry, copper melts and different alloys.

Positherm® Non-Splash



Working conditions in iron and steel works have been drastically improved over the last years. As a contribution to operator safety, Heraeus Electro-Nite has developed a Positherm® Non-Splash thermocouple.

The new splash-free material was selected based on its non-splash characteristics, but also on its ecological properties. Major components are refractory cement, expanded glass particles, glass fibres and a binder.

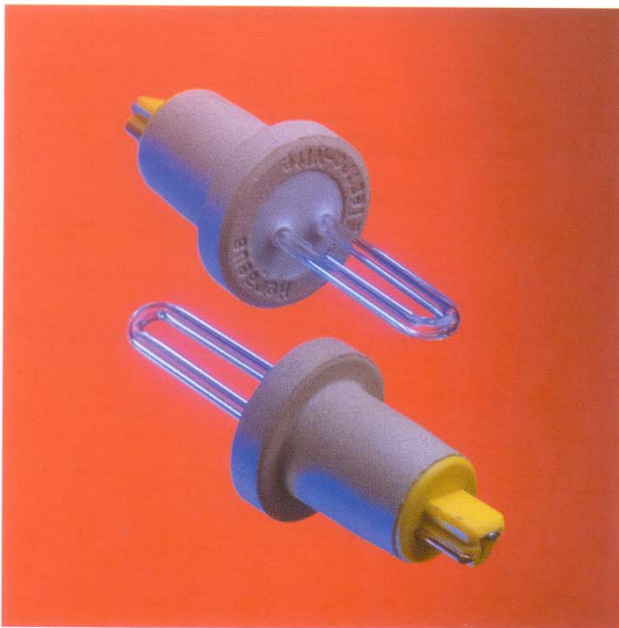
In particular for applications where the operator stands near to the liquid metal, such as small furnaces, ladles, runners, tundishes and moulds, it is recommended to use the Positherm® Non-Splash. Calibration, accuracy, performance and other features are the same as for the standard Positherm® thermocouple. Under favourable conditions, Positherm® Non-Splash thermocouples

may even be used for multiple immersion although they are not designed for this.

Positherm® Non-Splash thermocouples are available in various standard non-splash lengths and cardboard tubes.

Packing: 40 units per box

Positherm® for close-up measurements



For repeated measurements in small, slag free melts where only the quartz tube is immersed, Heraeus Electro-Nite designed its Positherm® for close-up applications. It consists of a PtRh/Pt-thermocouple in an extra long quartz protection tube, cemented in a ceramic housing, and fitted with a special high temperature connector assuring complete contact even after a number of dips. Depending on the intervals between successive immersions and the metal temperature, the number of measurements may vary. The use of a small cardboard tube for thermal protection of contact block and probe holder is recommended.

Immersion Lances

Positherm® thermocouples may be dipped either by means of an appropriate hand lance (Fig. 1) or an automated lance. For quick and easy change of the lower part of automated lances including contact block and probe holder, Heraeus Electro-Nite developed the Quick Connecting Lance system (Fig. 2).

A large range of ready-made manual immersion lances, straight or bent, can be supplied to suit customer's needs. Components may be ordered separately (see hardware list).

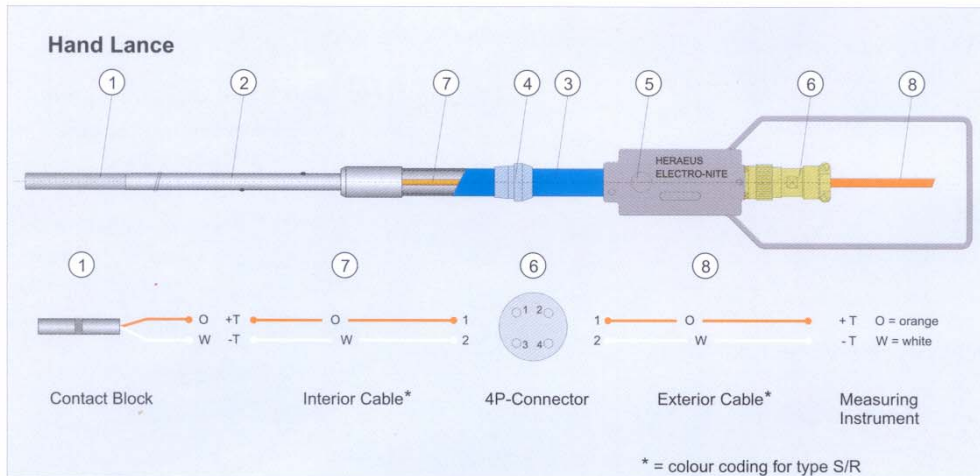


Fig. 1

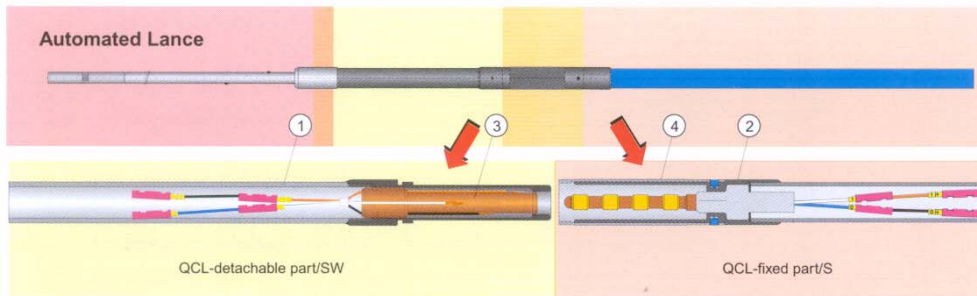


Fig. 2

ORDERING INFORMATION POSITHERM®

Calibration Pt 10% Rh / Pt

Cardboard length Nominal (mm)	Slag cap Steel	Slag cap Aluminium	Slag cap Copper
150	TC 100301	TC 101301	
300	TC 100303	TC 101303	
400	TC 100304	TC 101304	TC 102304
500	TC 100305	TC 101305	
600	TC 100306	TC 101306	TC 102306
700	TC 100307	TC 101307	
900	TC 100309	TC 101309	TC 102309
1200	TC 100312	TC 101312	TC 102312
1500	TC 100315	TC 101315	
1700	TC 100317	TC 101317	

Calibration Pt 13% Rh / Pt

Cardboard length Nominal (mm)	Slag cap Steel	Slag cap Aluminium	Slag cap Copper
150	TC 130301	TC 131301	
300	TC 130303	TC 131303	
400	TC 130304	TC 131304	TC 132304
500	TC 130305	TC 131305	
600	TC 130306	TC 131306	TC 132306
700	TC 130307	TC 131307	
900	TC 130309	TC 131309	TC 132309
1200	TC 130312	TC 131312	TC 132312
1500	TC 130315	TC 131315	
1700	TC 130317	TC 131317	

Calibration Pt 30% Rh / Pt 6% Rh

Cardboard length Nominal (mm)	Slag cap Steel	Slag cap Aluminium	Slag cap Copper
150	TC 360301	TC 361301	on
300	TC 360303	TC 361303	customer
400	TC 360304	TC 361304	request
500	TC 360305	TC 361305	only
600	TC 360306	TC 361306	
700	TC 360307	TC 361307	
900	TC 360309	TC 361309	
1200	TC 360312	TC 361312	
1500	TC 360315	TC 361315	
1700	TC 360317	TC 361317	

For extreme immersion conditions, thermocouples with extra thick cardboard tubes (inner diameter 17.9 mm and outer diameter 36.8 mm) are available. Please, contact our nearest sales office or representative for correct ordering information.

Telescopic oversleeves

Part number	Length (mm)	Inner dia. (mm)	Outer dia. (mm)
RM 33012005	900	31.0	38.7
RM 33012006	1200	31.0	38.7
RM 33012007	1500	31.0	38.7

Packing: bundles of 20 tubes, 600 tubes on a pallet.

ORDERING INFORMATION POSITHERM® NON-SPLASH

Calibration Pt 10% Rh / Pt

Cardboard length Nominal (mm)	Non-Splash length (mm)	Slag cap Steel	Slag cap Aluminium	Slag cap Copper
400	100	NS 10030401	NS 10130401	NS 10230401
400	200	NS 10030402	NS 10130402	NS 10230402
600	200	NS 10030602	NS 10130602	NS 10230602
900 (tundish)	500	NS 10030995		
1200 (tundish)	500	NS 10031295		

Calibration Pt 13% Rh / Pt

Cardboard length Nominal (mm)	Non-Splash length (mm)	Slag cap Steel	Slag cap Aluminium	Slag cap Copper
400	100	NS 13030401	NS 13130401	NS 13230401
400	200	NS 13030402	NS 13130402	NS 13230402
600	200	NS 13030602	NS 13130602	NS 13230602
900 (tundish)	500	NS 13030995		
1200 (tundish)	500	NS 13031295		

On special request, Positherm® Non-Splash thermocouples are available in calibration Pt 30% Rh / Pt 6% Rh. To obtain the correct part numbers, replace the first and second digit with 36.

ORDERING INFORMATION POSITHERM[®] FOR CLOSE-UP MEASUREMENTS

Calibration	Part number
Pt 10% Rh / Pt	NS 1003F
Pt 13% Rh / Pt	NS 1303F

Packing: 300 units / box
Cardboard tube, 300 mm long: OP 290722
Packing: 50 units / box

HAND LANCE HARDWARE AND ACCESSORIES

1. Contact block		
Compensated for type R and S thermocouples		LC 33016045
Non-compensated for type B thermocouples		LC 33016046
2. Probe holder		
Nominal length:		
300 mm		RM 33016004
400 mm		RM 33016006
500 mm		RM 33016008
600 mm		RM 33016010
700 mm		RM 33016012
900 mm		RM 33016014
1200 mm		RM 33016017
1500 mm		RM 33016062
1700 mm		RM 33016063
3. Extension pipe 3/4" dia. (length to suit application)		RM 33016023
4. Arrest ring for oversleeves		RM 33016040
5. Handle (without end connector)		LC 33016076
6. 4P-connector (male and female part)		LC 33016075
7. Interior cable (mineral insulated, 2-conductor)		
Compensated (Cu-CuNi)		LC 33024006
Non-compensated (Cu-Cu)		LC 33024014
8. Exterior cable (Nepra / Nepra insulated, 2-conductor)		
Compensated (Cu-CuNi)		LC 33024002
Non-compensated (Cu-Cu)		LC 33024015

QUICK CONNECTING LANCE HARDWARE

1+3	Detachable part / SW with female connector (for type S/R)	LC 24016001
	Detachable part / SW with female connector (for type B)	LC 24016012
2+4	Fixed part / S with male contact block (for type S/R)	LC 24016000
	Fixed part / S with male contact block (for type B)	LC 24016011
3.	Female connector for type S/R	LC 24016006
	Female connector for type B	LC 24016014
4.	Contact block for type S/R	LC 24016005
	Contact block for type B	LC 24016013

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