

National Metrology Laboratory

Schedule of Temperature Calibration

Issue No: 03

Issue date: 13 April 2006

SUMMARY OF SERVICES

Calibration performed on permanent laboratory premises

Temperature

Fixed point cells

Resistance thermometers, calibrated by comparison

Resistance thermometers, fixed point calibration

Block 'calibrators'

Temperature indicators and recorders, with temperature sensors

Thermocouples, base metal types, eg K, N, T

Thermocouples, platinum/rhodium types

Liquid-in-glass thermometers, mercury filled

Liquid-in-glass thermometers, spirit filled

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DETAIL OF CALIBRATION SERVICE

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as An Expanded Uncertainty (k=2)	Remarks
TEMPERATURE			NOTES
Fixed point cells	Mercury triple point (-38.834°C)	0.64mK	
	Water triple point (0.01°C)	0.32mK	
	Gallium melting point (29.765°C)	0.36mK	
	Tin freezing point (231.928)	2.0mK	
	Zinc freezing point (419.527)	3.9mK	
4-wire platinum resistance thermometer Fixed point calibration	Mercury triple point (-38.834°C)	2.0mK	
	Water triple point (0.01°C)	1.0mK	
	Gallium melting point (29.765°C)	2.0mK	
	Tin freezing point (231.928)	2.0mK	
	Zinc freezing point (419.527)	4.0mK	
Calibration by comparison (Digital thermometers with PRTs or PTs)	0°C down to -75°C	4 mK	
	above 0°C up to +80°C	5 mK	
	above 80°C up to +200°C	6 mK	
	above 200°C up to +250°C	10 mK	
	above 250°C up to +500°C	30 mK	

DETAIL OF CALIBRATION SERVICE

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as An Expanded Uncertainty (k=2)	Remarks
TEMPERATURE			NOTES
Electronic Thermometers with sensors (resolution = 0.1°C)	Below 0°C down to -75°C 0°C above 0°C up to +80°C above 80°C up to +200°C above 200°C up to +250°C above 250°C up to +500°C	As for digital thermometers with PRT's or PTs above – plus one half least significant digit.	
Liquid-in-glass thermometers	Below -40°C down to -75°C Above -40°C up to -10°C above -10°C up to +100°C above 100°C up to +200°C above 220°C up to +250°C	0.03°C 0.025°C 0.01°C 0.02°C 0.04°C	
Block 'calibrators'	Below 400°C down to -75°C above 400°C up to +660°C	0.11°C 1.0°C	
Nobel Thermocouples, calibrated by comparison	-20°C down to -75°C above -20°C up to +80°C above +80°C up to +450°C above 450°C up to +1100°C above 1100°C up to +1500°C	0.9°C 0.6°C 0.9°C 2.2°C 4.7°C	