

Thermometry, Colombia, INM (CO) (Instituto Nacional de Metrología de Colombia)



Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty					Comments	NMI Service Identifier
Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
Temperature	Platinum resistance thermometer	Ice point bath	0	0	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Approved on 23 October 2015	INM-L02-04
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in stirred ethanol bath	-80	0	°C	Temperature	21 °C ± 2 °C	0.072	°C	2	95%	No	Approved on 23 October 2015	INM-L02-05
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in stirred water and oil baths	0	150	°C	Temperature	21 °C ± 2 °C	0.044	°C	2	95%	No	Approved on 23 October 2015	INM-L02-06
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in metal block furnace	50	100	°C	Temperature	21 °C ± 2 °C	0.120	°C	2	95%	No	Approved on 23 October 2015	INM-L02-07
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in metal block furnace	100	200	°C	Temperature	21 °C ± 2 °C	0.220	°C	2	95%	No	Approved on 23 October 2015	INM-L02-08
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in metal block furnace	200	300	°C	Temperature	21 °C ± 2 °C	0.320	°C	2	95%	No	Approved on 23 October 2015	INM-L02-09
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Platinum resistance thermometer	Comparison in metal block furnace	300	419.5	°C	Temperature	21 °C ± 2 °C	0.440	°C	2	95%	No	Approved on 23 October 2015	INM-L02-10
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Thermocouples: noble metal (Types S, R and B)	Comparison ice point and metal tube, and block furnace	0	400	°C	Temperature	21 °C ± 2 °C	0.12 to 1.2	°C	2	95%	No	Approved on 23 October 2015	INM-L02-11

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Thermocouples: noble metal (Types S, R and B)	Comparison metal tube, and block furnace	400	800	°C	Temperature	21 °C ± 2 °C	1.2 to 2.4	°C	2	95%	No	Approved on 23 October 2015	INM-L02-12
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Thermocouples: noble metal, (Types S, R and B)	Comparison metal tube, and block furnace	800	1200	°C	Temperature	21 °C ± 2 °C	2.4 to 3.3	°C	2	95%	No	Approved on 23 October 2015	INM-L02-13
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometer: 0.05 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.048	°C	2	95%	No	Approved on 23 October 2015	INM-L02-14
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.1 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.049	°C	2	95%	No	Approved on 23 October 2015	INM-L02-15
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.2 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.056	°C	2	95%	No	Approved on 23 October 2015	INM-L02-16
						Relative humidity	50% RH ± 15% RH							

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
Temperature	Liquid-in-glass thermometers: 0.5 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.092	°C	2	95%	No	Approved on 23 October 2015	INM-L02-17
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 1 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.17	°C	2	95%	No	Approved on 23 October 2015	INM-L02-18
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.05 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	20 °C ± 2 °C	0.037	°C	2	95%	No	Approved on 23 October 2015	INM-L02-19
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.1 °C graduation	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.039	°C	2	95%	No	Approved on 23 October 2015	INM-L02-20
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.2 °C graduation	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.048	°C	2	95%	No	Approved on 23 October 2015	INM-L02-21
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.5 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.089	°C	2	95%	No	Approved on 23 October 2015	INM-L02-22

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
						Relative humidity	50% RH ± 15% RH							
Temperature	Liquid-in-glass thermometers: 1 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.17	°C	2	95%	No	Approved on 23 October 2015	INM-L02-23
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.05 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.053	°C	2	95%	No	Approved on 23 October 2015	INM-L02-24
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.1 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.054	°C	2	95%	No	Approved on 23 October 2015	INM-L02-25
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.2 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.061	°C	2	95%	No	Approved on 23 October 2015	INM-L02-26
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.5 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.096	°C	2	95%	No	Approved on 23 October 2015	INM-L02-27

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 1 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.17	°C	2	95%	No	Approved on 23 October 2015	INM-L02-28
	Total immersion, Mercury					Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.02 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	16	24	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Approved on 23 October 2015	INM-L02-29
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Liquid-in-glass thermometers: 0.01 °C graduation, total immersion, Mercury	Comparison in stirred liquid bath	-1	1	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Approved on 23 October 2015	INM-L02-30
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Ice point bath	0	0	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Approved on 23 October 2015	INM-L02-31
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Comparison in stirred ethanol bath	-80	0	°C	Temperature	21 °C ± 2 °C	0.072	°C	2	95%	No	Approved on 23 October 2015	INM-L02-32
							50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Comparison in stirred water and oil baths	0	150	°C	Temperature	21 °C ± 2 °C	0.044	°C	2	95%	No	Approved on 23 October 2015	INM-L02-33
							50 %RH ± 15 %RH							

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
Temperature	Digital system thermometers (PRT sensor)	Comparison in metal block furnace	50	100	°C	Temperature	21 °C ± 2 °C	0.120	°C	2	95%	No	Approved on 23 October 2015	INM-L02-34
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Comparison in metal block furnace	100	200	°C	Temperature	21 °C ± 2 °C	0.220	°C	2	95%	No	Approved on 23 October 2015	INM-L02-35
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Comparison in metal block furnace	200	300	°C	Temperature	21 °C ± 2 °C	0.320	°C	2	95%	No	Approved on 23 October 2015	INM-L02-36
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (PRT sensor)	Comparison in metal block furnace	300	419.5	°C	Temperature	21 °C ± 2 °C	0.440	°C	2	95%	No	Approved on 23 October 2015	INM-L02-37
						Relative humidity	50 %RH ± 15 %RH							
Temperature	Digital system thermometers (base-metal thermocouple sensor)	Comparison in stirred liquid bath and metal block furnace	-80	250	°C	Temperature	21 °C ± 2 °C	0.80	°C	2	95%	No	Approved on 23 October 2015	INM-L02-38
						Relative humidity	50 %RH ± 15 %RH							
Humidity	Relative humidity (capacitive hygrometers)	Chilled mirror hygrometer, and two pressure humidity generator	12	85	%RH	Continuous gas flow	maximum 10 l/min	1.7 to 2.5	%RH	2	95%	No	Approved on 23 October 2015	INM-L02-39
						Atmospheric pressure	751 hPa ± 10 hPa							
						Test chamber temperature	20 °C ± 0.2 °C							
						Room temperature	21 °C ± 2 °C							

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						Relative humidity	50 %RH ± 15 %RH							
Temperature	Thermohygrometers: temperature measurement	Comparison in climatic chamber	0	70	°C	Test chamber relative humidity	50 %RH ± 1.7 %RH	0.2	°C	2	95%	No	This measurement is independent from relative humidity measurement. Approved on 23 October 2015	INM-L02-40
						Room temperature	21 °C ± 2 °C							
						Relative humidity	50 %RH ± 15 %RH							