



SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By: DIV20
Address: B57
Contact: KEN CHIANG
Manufacturer Model: OMEGA Type K
Description: THERMOCOUPLE
Serial No: 11118
Asset No: 011118
Procedure: THERMOCOUPLE GENERAL, JAN/03

Work Order: 444060484
Date Issued: Aug 24, 2004
Calibration Date: Aug 24, 2004
****Calibration Due:** Feb 24, 2005
Calibration Location: Bldg. 64
Environment: Temp. 73.0°F Hum. 40 %RH
***As Found:** SEE ATTACHED DATA
***As Left:** SEE ATTACHED DATA

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSINC SL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. See Remarks or attached Calibration Report with the same Work Order number for calibration data

*The client has sole responsibility for determination of in/out of tolerance or compliance/non-compliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: SEE DATA SHEET

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
010814	HART SCIENTIFIC	1529	TC METER	Apr 16, 05
010813	HART SCIENTIFIC	5650	THERMOCOUPLE	Mar 19, 05

Approved by: Walt Hill
Metrology Group Leader

m:\Nona21a1.rpt Rev date 11, May 04

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
 Calibration Laboratory
 Measurement Report

Work Order	444060484	Mfr	Omega	Tech:	blt
Asset No.	011118	Model	TYPE K	Cal Date:	24-Aug-04
Serial No.	11118	Type	THERMOCOUPLE		

Remarks:

Reading are without PASS or FAIL determination.
 The user must determine if the instrument meets their requirements.

Function/Range	Test Point	TI Reading	Difference	+/-Uncertainty
	°C	°C	°C	°C
TEMPERATURE				
900 °C	897.70	898.45	0.75	1.6
1000 °C	997.60	995.83	-1.77	1.6
1100 °C	1093.76	1096.07	2.31	1.6
END OF REPORT				



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Certificate of Calibration

0972-01

Submitted By: DIV20

Address: B57

Contact: KEN CHIANG

Manufacturer Model: OMEGA Type K

Description: THERMOCOUPLE

Serial No: 11118

Asset No: 011118

Procedure: THERMOCOUPLE GENERAL, JAN/03

Work Order: 303062801

Date Issued: Feb 10, 2005

Calibration Date: Feb 10, 2005

**Calibration Due: Aug 10, 2005

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 40 %RH

*As Found: SEE REMARKS

*As Left: SEE REMARKS

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Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. See Remarks or attached Calibration Report with the same Work Order number for calibration data.

*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: Cal at 900, 1000 1100 Deg C

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
010813	HART SCIENTIFIC	5650	THERMOCOUPLE	Dec 06, 05
010814	HART SCIENTIFIC	1529	THERMOCOUPLE THERMOMETER	Apr 16, 05

Approved by: Walt Hill
Metrology Group Leader

m:\a2la1.rpt Rev date 11, May 04

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
 Calibration Laboratory
 Measurement Report

Work Order	303062801	Mfr	OMEGA	Tech:	blt
Asset No.	011118	Model	TYPE K	Cal Date:	10-Feb-05
Serial No.	11118	Type	THERMOCOUPLE		
Remarks:					
Limits are based on ASTM E230-02					

Function/Range	Test Point	TI Reading	Difference	+/-Limits	+/-Uncertainty	Found/Left
	°C	°C	°C	°C	°C	Result
900 °C	900.3640	899.85	0.52	6.8	1.7	Pass
1000 °C	999.6013	1001.24	-1.64	7.5	1.7	Pass
1100 °C	1100.484	1098.14	2.35	8.3	1.7	Pass

END OF REPORT