TEST REPORT

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Report Number: 1483-11001

Report Issued January 04, 2011

Client: Therm-Omega-Tech Inc. **Project No.** 17991
353 Ivyland Road
Warminster, Pennsylvania 18974
Contact: Nick Tallos

Source of Samples: The samples were delivered to IAPMO R&T Lab by Therm-Omega-Tech Inc. on August 12, 2010 and were received in good condition.

Date of Evaluation: December 06, 2010 to January 04, 2011.

Sample Description: Model 2" CS TRV Valve. Additional models ½" CS TRV, ¾" CS TRV, 1" CS TRV, 1-1/4" CS TRV, 1-1/2" CS TRV.

Scope of Testing: The purpose of this testing was to determine if the Model 2" CS TRV Valve met the requirements of ANSI/NSF61- 2010, section 8.

CONCLUSION: **Samples tested of the Therm-Omega-Tech Inc. Model 2" CS TRV Valve COMPLIED with ANSI/NSF61 – 2010 at commercial hot temperature 82°C. Please refer to page 2 to page 4 for more detailed findings.**

By our signatures below we certify that all the testing and sample preparation for this report was performed under continuous, direct supervision of IAPMO R&T Lab.

Tested by,

Lin Nguyen, Chemist

Reviewed by,

Michael N. Briggs, Manager, Analytical Lab

Primary Standards: ANSI/NSF-61-2010, section 8:

Preparation of Test Samples

Test samples were rinsed and conditioned as described in ANSI/NSF61-2010, annex B, sections B.4.2 and B.4.3.

Conditioning and Exposure

In-product conditioning and exposure were conducted as described in ANSI/NSF61-2010 Annex B, section B.5.3 and B.5.4. A test assembly contained one valve with enough inert tubing attached that the valve was exposed to 1 liter as required in the standard. Two (2) separate assemblies were prepared and exposed to two (2) conditioning solutions (pH5 and pH 10 for metal evaluations) at commercial hot temperature (82°C) for 17 days as specified in the standard, in annex B section B.4.3.

Exposure and Normalization

Following conditioning, the samples were exposed to extraction water according to the applicable scheme detailed in annex B, Sections B.4.4. The samples were exposed at commercial hot conditions following the time sequence shown in Table B8. The final exposure was for 16 hours.

The concentration of extracted contaminants were normalized to service line and residential products according to the normalization procedure outlined in annex B, section B.8.4

The laboratory concentration was normalized using the equation of: Lab concentration * N3 *(12/final exposure time).

Extraction Water

The extraction water was prepared as described in ANSI/NSF61-2010, annex B section B9. pH5 and pH10 waters were prepared with chlorine using volumes shown in Table B15.

Collection/preservation of extraction water

Immediately following the exposure period, extraction waters collected for analysis were poured into previously prepared sample containers for storage until analysis, as specified in annex B, Section B.6 and Table B8.

Extracts for metal analysis were acidified with nitric acid as specified in EPA protocols.

Evaluation of Contaminant Concentrations

Metal and organic contaminants, were determined as single point determinations. The normalized results were compared to MCL, TAC, or action level as applicable.

Analytical methodology

Metal determinations: EPA 200.8, Metal determinations by ICP/MS

Analytical Instrumentation

Metal determinations: Thermo Electron X7 ICP/MS with CCT

Discussion:

The CLI(PMI) and assembly drawing show only various grades of stainless steel are in contact with water. The 2" valve was analyzed as it has a larger wetted area than the additional valves.

Type 302, 303 and PH15-7 MO stainless steels are used in this valve. Type 302 is equivalent to UNS S30300. Type 303 is equivalent to UNS S30300. PH15-7 NO is equivalent to UNS S15700. The composition of these alloys is contained in ASTM DS-561 and a copy of the appropriate tables are appended to the CLI(PMI). As these valves are intended to be used in hot water, Section 3, Table 3.1 analytes for stainless steel (regulated metals and nickel) were monitored in the appropriate retained exposure water.

As only metal alloys contact water organic determinations are not needed.

To comply with the standard all metal concentrations observed must be less than the TAC, MCL, or AL set in the standard.

The normalized metals concentrations of all the analytes are well below the MCL, TAC or AL in both exposure waters.

Metal Evaluation at Commercial Hot Temperature (82°C)

Metal	MCL (ug/L)	pH5 Analytical Data (ug/L)	pH5 Static Normalized (ug/L)	pH10 Analytical Data (ug/L)	pH10 Static Normalized Data pH 10	Test Methods
Aluminum	2000	ND (< 3.9970)	ND (< 0.9892)	ND (< 3.9970)	ND (< 0.9892)	EPA 200.8
Antimony	6	ND (< 0.0525)	ND (< 0.0130)	0.059	0.015	EPA 200.8
Arsenic	10	ND (< 0.5534)	ND (< 0.1370)	ND (< 0.5534)	ND (< 0.1370)	EPA 200.8
Barium	2000	ND (< 0.3043)	ND (< 0.0753)	ND (< 0.3043)	ND (< 0.0753)	EPA 200.8
Beryllium	4	ND (< 0.0547)	ND (< 0.0135)	ND (< 0.0547)	ND (< 0.0135)	EPA 200.8
Bismuth	100	ND (< 0.0475)	ND (< 0.0118)	ND (< 0.0475)	ND (< 0.0118)	EPA 200.8
Cadmium	5	ND (< 0.0555)	ND (< 0.0137)	ND (< 0.0555)	ND (< 0.0137)	EPA 200.8
Chromium	100	59.323	14.682	22.378	5.539	EPA 200.8
Copper	1300 (AL)	1.881	0.466	5.140	1.272	EPA 200.8
Mercury	2	ND (< 0.0150)	ND (< 0.0037)	ND (< 0.0150)	ND (< 0.0037)	EPA 200.8
Nickel	100 (TAC)	289.999	71.775	4.813	1.191	EPA 200.8
Selenium	50	ND (< 0.4354)	ND (< 0.1078)	ND (< 0.4354)	ND (< 0.1078)	EPA 200.8
Thallium	2	ND (< 0.0515)	ND (< 0.0127)	ND (< 0.0515)	ND (< 0.0127)	EPA 200.8
Tin	200	ND (< 0.0625)	ND (< 0.0155)	2.778	0.688	EPA 200.8
Zinc	3000 (TAC)	ND (< 4.7052)	ND (< 1.1645)	ND (< 4.7052)	ND (< 1.1645)	EPA 200.8
Lead	15 (AL)	0.546	0.135	0.286	0.071	EPA 200.8

MCL: Maximum Contaminant Level
TAC: Total Allowable Concentration
AL: Action Level

Note: Static Normalized Contaminant Concentration for in line products =
Laboratory Concentration x N1 * N3 * 12/final exposure time
where:

N1 = SAF/SAL x Vl/Vfstatic = 1
N3 = 0.33
final exposure time = 16 hour