



Manufacturer of Flexible Metal Hose and Gas Piping Products

Engineering Project Report - EPR2014-04

DoubleTrac 2 hr Fire Test

1. INTRODUCTION

Fire Test 1" unjacketed DoubleTrac (worst case size, as it has the thinnest wall thickness) for 2 hours in an open flame per a modified UL 2039 test protocol.

2. SCOPE

Three 18" long unjacketed samples with stainless steel end fittings will be fabricated using production material and standard field assembly procedures for DoubleTrac. The samples will not contain the secondary jacket, as this test is only determining primary pipe and end fitting fire resistance. The samples will be tested at UL for the 2 hour Fire Test, resulting in a fact finding report issued by UL.

Test Location:

UL LLC
1285 Walt Whitman Rd
Melville, NY 11747

3. BACKGROUND

Without an existing standard to test the piping to obtain a 2 hour rating, OmegaFlex utilized a portion of UL 2039 Section 13 (Outline Investigation for Flexible Connector Piping for Fuels) to establish the test parameters. The only change to the UL 2039 test parameters, was increasing the time in flame from 30 minutes to 2 hours.

The UL report issued, is not a UL listing, but a fact finding report which shows compliance to the test protocol established by OmegaFlex.

4. SET-UP / EXPERIMENTAL PROCEDURE

1" DoubleTrac with Stainless Steel end fittings will be subjected to the hydrocarbon pool fire described below for 2 hours for aboveground rated pipe.



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The sample will be filled with water, capped/plugged at one end and connected to a metal pipe or tube with a shutoff valve, pressure gauge, pressure regulator or equivalent means at the other end to maintain the rated pressure throughout the fire exposure.

The sample will be pressurized to 50 psi, centered and supported 4 inches above the rim of a steel liquid-tight fire pan, approximately 20 inch diameter by 6 inch deep, so that one end fitting, and at least 1/2 of the pipe is exposed to the flame.

After the sample is positioned and pressurized, approximately 1 gal for aboveground rated of commercial grade kerosene (K1) will be ignited in the fire pan, followed by additional amounts of kerosene, as needed to maintain the fire for 2 hours.

After the 2 hours flame test, the fire will be extinguished using an appropriate method that does not damage the sample. After cooling, the sample will be visually examined for damage before repeat leakage test at lab temperature.

5. CONCLUSION

The test assemblies did not leak during the fire test, or subsequent to the fire test when leak tested at room temperature.

All assemblies passed all testing, as defined by OmegaFlex, and testing by UL.



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6. CURRENT REVISION – Revision NC

Written By: Brian Breitinger
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OmegaFlex, Inc.

Approved By: Randy Bayless
Director of Manufacturing and Engineering
OmegaFlex, Inc.

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Revision NC

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APPENDIX

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OMEGA FLEX INC
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E-mail: randy.bayless@omegaflex.net

Reference: File: SV16157 Project: 4786592323

Subject: This report covers Non Certification Test Services for model UGF-FSP-16 (1” DoubleTrac un-jacketed 316L stainless steel core with 316 stainless steel field attachable fitting)

Dear Mr. Randy Bayless

Per your request, project 4786592323 was opened, in accordance with your testing requirements for the evaluation of model UGF-FSP-16 on 9/26/2014. An executive summary of our findings can be found just below and a copy of the test data has been included at the end of this report.

UL LLC did not select the samples, determine whether the samples were representative of production samples or witness the production of the test samples, nor were we provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested.

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This letter will serve to report that all tests on the subject product have been completed. Thank you for the opportunity to provide your company with these services. Please do not hesitate to contact us if you should have any questions or comments.

Sincerely:
Joshua Frescott
Laboratory Manager

UL LLC
1285 Walt Whitman Rd
Melville, NY 11747
T: 631-546-2741
Joshua.Frescott@ul.com

FIRE TEST METHOD – SU2039 – Sec. 13

Samples of all connector pipe types in worst case size(s) were subjected to the hydrocarbon pool fire described below for 2 hours for aboveground rated pipe.

The sample was filled with water, capped/plugged at one end and connected to a metal pipe or tube with a shutoff valve, pressure gauge, pressure regulator or equivalent means at the other end to maintain the rated pressure throughout the fire exposure.

The sample was then pressurized to rated 50 psi, centered and supported 4 inches above the rim of a steel liquid-tight fire pan, approximately 20 inch diameter by 6 inch deep, so that one end fitting, joints and at least 1/2 of the pipe is exposed to the flame.

After the sample is positioned and pressurized, approximately 1 gal for aboveground rated of commercial grade kerosene (K1) was ignited in the fire pan, followed by additional amounts of kerosene, as needed to maintain the fire for the test period.

After the required time, the fire was extinguished using an appropriate method that did not damage the sample. After cooling, the sample was visually examined for damage before repeat Leak Testing at lab temperature.

RESULTS

All samples tested; Sample No. 1 did lead at shut off valve (part of test setup) and Sample Nos. 2 and 3 did not show evidence of leakage during Fire Test, and all samples did not leak after the repeat Leakage Test.

Fire and Leakage Results

Sample No.	Size (in)	Fire Test Pressure (psig)	Fire Test Leakage ? (Y/N)	Leakage @ 2X ? (Y/N)	Fire Damage ? (Location & Type)
1	18	50	Leakage noted from shut off valve stem.	N	No visual damage other than at shut off valve.
2	18	50	No leakage noted during test. Valve was removed before testing.	N	No visual damage.
3	18	50	No leakage noted during test. Valve was removed before testing.	N	No visual damage.

PDE Note – Base worst case type on least fire resistant materials & thinnest pipe wall combo.

Water may be used as a buffer for the delivery of additional fuel through a metal tube at the bottom of the pan with a control system.

The pressure was monitored with water adjusted and/or steam removed as needed to maintain the pressure within +/-5% of the rated value.