

CLIENT: Monoxivent
1306 Mill St.
Rock Island, IL 61201

Test Report No: TJ5212	Date: January 30, 2018
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SAMPLE ID: 6" DIAMETER FRP SINGLE WALL UNDERDUCT FOR VEHICLE EXHAUST APPLICATIONS

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI facilities on November 14, 2017

TESTING PERIOD: December 21, 2017-January 19, 2018

AUTHORIZATION: Signed work order 17SP080801R1.

TEST REQUESTED: Modified ASTM D2412-Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.

TEST RESULTS: Detailed test results are on the following pages

Prepared By

**Signed for and on behalf of
QAI Laboratories, Inc.**



Rocky Hale
Material Test Technician

Project Manager

Test Procedure:

A total of 15 specimens were measured and placed in conditioning. Five were conditioned at 73°F, five at 250°F and five at 500°F. The conditioning period was 4 hours. After conditioning each specimen was tested for crush strength. The force required to deflect the specimens 5% and 10% of their nominal diameter was recorded as well as the force required to cause failure. The outside diameter of the specimens were not sanded. All tests were terminated due to delamination failure of the specimens at displacements beyond 10%.

Sample	Cond. Temp	Length	OD	ID	Wall Thickness	5% Load	10% Load	Max Load	5% Pipe Stiffness	10% Pipe Stiffness
1	73F	12.09	6.482	6.008	0.237	936	1696	2375	258.06	233.80
2	73F	12.04	6.460	6.010	0.225	1060	1880	2520	293.47	260.24
3	73F	12.04	6.440	6.004	0.218	938	1641	2263	259.69	227.16
4	73F	12.13	6.464	6.012	0.226	1053	1833	2317	289.37	251.85
5	73F	11.94	6.522	6.012	0.255	1028	1817	2454	286.99	253.63
Average		12.05	6.474	6.009	0.232	1003	1773.4	2385.8	277.50	245.32
1	250F	12.00	6.420	5.996	0.212	861	1650	2591	239.17	229.17
2	250F	12.07	6.837	6.013	0.412	1754	3033	4861	484.40	418.81
3	250F	12.01	6.471	6.003	0.234	2639	6190	6951	732.45	859.01
4	250F	12.09	6.447	6.003	0.222	888	1582	2565	244.83	218.09
5	250F	12.06	6.422	6.004	0.209	928	1681	2297	256.50	232.31
Average		12.05	6.519	6.004	0.258	1414	2827.2	3853	391.28	391.17
1	500F	12.05	6.448	6.012	0.218	512	1146	1512	141.63	158.51
2	500F	11.99	6.424	6.012	0.206	824	1284	1720	229.08	178.48
3	500F	12.04	6.416	5.954	0.231	741	1221	1430	205.15	169.02
4	500F	12.07	6.450	5.964	0.243	680	1055	1383	187.79	145.68
5	500F	12.05	6.430	5.946	0.242	769	1238	1332	212.72	171.23
Average		12.04	6.434	5.978	0.228	705.2	1188.8	1475.4	195.24	164.56

All dimensions shown in inches, loads in lbf, and stiffness in psi.

*****END OF TEST REPORT*****