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Investigative Chemistry Geotechnical Construction Materials
Non Destructive Testing Failure Analysis Product Evaluation
Metallurgical Analysis Materials Testing Welder Qualification

**PRESSURE TESTING OF AK DUCT
20-3510F PLASTIC DUCT PIPE**

Prepared for:
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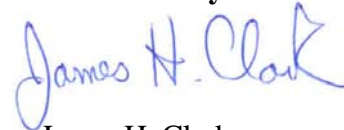
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The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.

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INTRODUCTION:

This report presents the results of pressure testing conducted on 20" diameter flange plastic duct pipe. Two samples of duct pipe were submitted by CDC Enterprises on September 28, 2009.

The scope of work was limited to pressure testing the flange joint connection of the duct pipe to the intent of UL 181 Factory-Made Air ducts and Air Connections, Section 17 Pressure Test on the duct pipe submitted and providing a report of the results. The testing was completed on October 2, 2009.

SAMPLE IDENTIFICATION:

Two eight foot long sections of AK Duct 20-3510F blue plastic duct pipe were submitted for testing. One end of each section was received with blind flange plate installed for conducting the testing. Also received for assembling the center test joint was one tube of AK AirTite Sealant and (12) 1/4" – 20 x 2-1/2" long bolts with gasketed washers.

SUMMARY OF RESULTS:

Pressure Leak Test of Flange Joint

The AK Duct 20–3510F plastic duct pipe flange joint connection system in an unrestrained state, sustained an internal maximum rated pressure of **10.0 inches / water column (0.36 psi)** for a period of 1 hour with **no joint leakage** as visually indicated by bubbles when checked with a soap solution **or separation**.

The flange joint also sustained 2-1/2" times the rated pressure or **25 inches / WC** pressure for 1 hour along with **40 inches / WC** and **50 inches WC** pressure for 1 hour, with **no bubble leakage** indicated **or separation** of the joint.

Note: The tensile (pull apart) force introduced on the flange system joint at the different test pressures were calculated using a nominal 20" diameter pipe to be as follows:

227 lb at 10.0 inches / water column (0.36 psi)

570 lb at 25.0 inches / water column (0.90 psi)

910 lb at 40 inches / WC (1.44 psi).

1,135 lb at 50 inches / WC (1.81 psi).

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TEST METHODS:

The testing was conducted by assembling the two 8ft long sections of the flange duct pipe using the AK AirTite Sealant and (12) ¼” – 20 x 2-1/2” long bolts with gasketed washers.

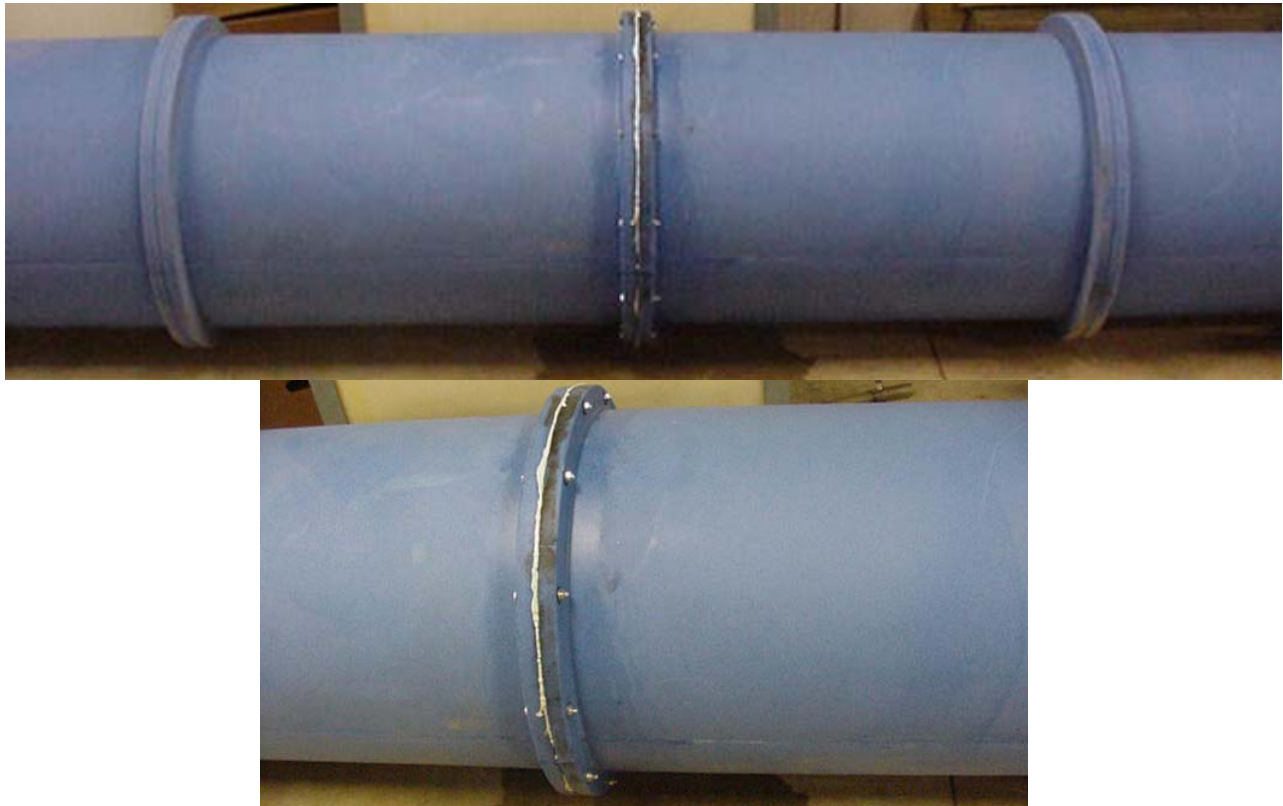
Two 1/8” beads of sealant were ran around the flange faces of both pipe sections at about third points across the face. A bead was also placed around each bolt hole location on the flanges. The two flanges were then butted to each other and the bolts with a gasket washer on either end used to draw the joint together to its final sealed assembled state.

The pressure was then applied to the assembly through the port in the side wall of pipe. The pressure was monitored using a water manometer from a second port in the tapped in the side wall of the pipe. The pressure was increased in increments to 10 inches of water column and held for 1 hour and the flange joint checked for leakage using a soap solution or any separation. The pressure was then increased to 25” WC, 40” WC and 50”WC holding for 1 hour at each increment while observing for leakage or any joint separation.

TEST EQUIPMENT:

50” Water Manometers – Type W, Model # 30E & Serial Number B389.

Photographs of assembled duct joint tested



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