



**Division of Industry  
Services**  
1400 East Washington Ave.  
Madison, WI 53703

Approval #

201312-O  
[Replaces 200604-  
O (Revised)]

## Wisconsin Building Product Evaluation

Material

AKDUCT™  
Underground Plastic Air Duct and Fitting System

Manufacturer

AQC Industries, LLC  
4600 Churchill St.  
Shoreview, MN 55126

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### SCOPE OF EVALUATION

This report evaluates the use of AKDUCT™ underground air duct and fitting system, manufactured by AQC Industries, LLC.

The requirements below are in accordance with the current **Wisconsin Uniform Dwelling Code:**

- **Underground Ducts:** The AKDUCT™ underground air duct and fitting system was evaluated for use as underground duct in accordance with **section SPS 323.08(4)**.
- **R-Value:** The AKDUCT™ underground air duct and fitting system was evaluated for the thermal insulation requirements for duct systems in accordance with **section SPS 322.42(1)**.

The requirements below in accordance with the current **Wisconsin Commercial Building Code**

- **Underground Ducts:** The AKDUCT™ underground air duct and fitting system was evaluated for use as underground duct in accordance with the general requirements of **section IMC 603.8**.
- **Flood Hazard:** The AKDUCT™ underground air duct and fitting system was evaluated for use as underground duct located in flood-hazard zone or a high-hazard zone in accordance with **section IMC 603.8**.

- **Plastic Ducts and Fittings:** The AKDUCT™ underground air duct and fitting system was evaluated for use as underground duct for use in forced-air heating and cooling systems, in accordance with **section IMC 603.8.3.**

### **DESCRIPTION AND USE**

AKDUCT™ and fittings are blue in color and are available in nominal diameters of 6, 8, 10, 12 and 14 inches. AKDUCT™ consists of a high-density polyethylene (HDPE) liner covered with a layer of air-entrained polyethylene. The pipe and fittings are manufactured with male ends and are joined with a gasket and clamp assembly. When tested in accordance with ASTM D 2412, at the average wall thickness noted in Table 1, the pipe stiffness exceeds 8 psi at 5 percent deflection.

### **TESTS AND RESULTS**

Pipe stiffness testing in accordance with ASTM D2412-02 Standard Test Method for “Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading” was conducted by Twin City Testing Corporation, Project No. 06-73517, on January 30, 2006. The pipe stiffness testing of 16 inch diameter duct resulted in **no** cracking, delamination or rupture when flattened between parallel plates to 70 % of the average inside diameter (point testing can be terminated as per standard). The average pipe stiffness is as follows:

<b>Stiffness (lbs/in./in.)</b>		<b>Load (lbs/lineal ft.)</b>
<u>@ 5% Deflection</u>	<u>@ 10% Deflection</u>	<u>@ 15% Deflection</u>
<b>10.6</b>	<b>8.0</b>	<b>189.9</b>

A copy of the evaluation can be viewed at the following address:

[http://www.icc-es.org/reports/pdf\\_files/PMG/PMG-1023.pdf](http://www.icc-es.org/reports/pdf_files/PMG/PMG-1023.pdf)

### **WISCONSIN COMMERCIAL BUILDING CODE COMPLIANCE**

**General:** The AKDUCT™ underground air duct and fitting system shall only be installed underground or encased in concrete.

The AKDUCT™ underground air duct and fitting system shall be limited to systems with a maximum air temperature of 150°F (66°C) at the discharge of the unit entering the duct system.

Installation of the system shall be in accordance with this evaluation, the manufacturer’s published installation instructions, the IMC and the ICC-ES evaluation and listing PMG-1023.

- **Slope:** Because the AKDUCT™ complies with the ICC-ES listing criteria LC1014, the AKDUCT™ and fittings need not slope to allow drainage where installed less than 27 inches below Base Flood Elevation. The system shall be installed with a slope to allow drainage to a point provided with access when installed more than 27 inches below Base Flood Elevation.

- **Supply and Return Air Ducts:** According to NSF Protocol P374 and as specified within ICC-ES evaluation and listing PMG-1023, the AKDUCT™ underground air duct and fitting system when tested in nominal 10 inch diameters exhibited thermal performance equivalent to PVC Duct, with an external R-10 known insulation value.

### **WISCONSIN UNIFORM DWELLING CODE (1-2 FAMILY) COMPLIANCE**

The provisions below are in accordance with the current **Wisconsin Uniform Dwelling Code:**

- **Underground Ducts:** The AKDUCT™ underground air duct and fitting system shall be installed in accordance with the applicable requirements of **section SPS 323.08 (5)**.
- **Supply and Return Air Ducts:** According to NSF Protocol P374 and as specified within ICC-ES evaluation and listing PMG-1023, the AKDUCT™ underground air duct and fitting system when tested in nominal 10 inch diameters exhibited thermal performance equivalent to PVC Duct, with an external R-10 known insulation value.

### **DISCLAIMER**

The department is not endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive or modify any code requirement not specified in this document.

### **EXPIRATION**

This approval will be valid through December 31, 2018, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The product approval is applicable to projects approved under the current edition of the applicable codes. This approval may be void for project approvals made under future applicable editions.

Approval Date: November 8, 2013	By: Duane Hubeler, PE Bureau of Technical Services
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