



Evaluation Report CCMC 13664-R Akduct

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Akduct”, when used as an air duct system in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2010:

- Clause 1.2.1.1.(1)(a), Division A, as an acceptable solution from Division B:
 - Article 6.2.3.5., Underground Ducts

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

2. Description

The product is an underground supply and return air duct system manufactured from medium density polyethylene. The system includes fittings and other accessories to complete a ductwork system that can carry heated and air-conditioned air under the floor structure of a building.



Figure 1. “Akduct” system layout

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “Akduct” being used in accordance with the conditions and limitations set out below.

- All NBC requirements with respect to excavation, backfilling, subsurface drainage and building foundations must be met.
- In areas where hydrostatic or hydrodynamic pressure can occur, the system must be installed to resist all forces acting on the duct system.
- When backfilling or grading, care should be taken to not push heavy loads directly on the duct. Heavy equipment must not be allowed to run over the duct. The loading on the duct from wet concrete and/or soil above the duct must be limited so as to not produce deflections in the duct greater than 5%.
- The soil covering the product must be well compacted and evenly distributed such that there are no gaps.

- Special attention must be given to ensure proper backfilling between the pipe, its fittings (connections) and the foundation/footing wall where space may be limited.
- The duct system must have no appreciable loss of strength when wet, and must be resistant to moisture-induced corrosion.
- All duct materials must be suitable for exposure to the temperature and humidity of the air being carried and must be resistant to corrosion caused by contaminants in the air conveyed through the duct.
- The product may not be used in areas where soil gas is a hazard (consult local regulatory authorities).
- The air temperature inside the duct may not exceed 80°C.
- The product is not intended to be used where it would be exposed within the building envelope.
- The product must be installed by a manufacturer-trained installer.
- A clean-out or pump-out connection shall be provided at every low point of the duct system.

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC’s evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Performance Requirements

Table 4.1.1 Results of Testing of the Pipe Stiffness of “Akduct”

Property	Duct Size (mm)	Required Pipe Stiffness at 5% Deflection (N/mm ²)	Result (N/mm ²)
Pipe stiffness	152 (6")	0.055	0.49
	203 (8")	0.055	0.15
	254 (10")	0.055	0.11
	305 (12")	0.055	0.08
	356 (14")	0.055	0.06
	405 (16")	0.055	0.06
	457 (18")	0.055	0.07
	508 (20")	0.055	0.07
	610 (24")	0.055	0.06
	914 (36")	0.055	0.07
1 222 (48")	0.055	0.08	

Table 4.1.2 Results of Testing of General Properties for “Akduct”

Property	Requirement	Result
Crush resistance for fittings	No visible signs of cracking	Pass
Joint connection pressure sealing test	No visible signs of leakage or joint separation	Pass
Chemical resistance	2% maximum change in mass after exposure	Pass
Leakage testing	No water entry into ducting and joints after 24 hours of submersion under water	Pass

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