



## **Insulation Emissions Tests** **airKrete**

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## 1. INTRODUCTION

At the request of airKrete Canada, ORTECH Environmental (ORTECH) conducted formaldehyde and volatile organic compound (VOC) emissions tests on a sample of airKrete insulation using ASTM D5116 “Small Chamber Tests Building Material/Products” method techniques. Emission tests were conducted at 24 hours and 96 hours from manufacture of the insulation.

## 2. TESTING METHODOLOGY

### 2.1 Materials

The airKrete insulation samples were supplied to ORTECH for emissions tests by airKrete Canada of Pickering, Ontario. The samples were manufactured at approximately 11:20 am on April 22, 2009 and delivered to ORTECH by 1:05 pm, April 22, 2009. The insulation was injected into glass dishes measuring 15 cm by 20 cm by 5 cm deep. The samples were wrapped in aluminum foil for shipment.

Information on the insulation provided by airKrete states the insulation is a cementitious product made of magnesium oxide and talc that is injected into walls with only compressed air and not blowing agent gases.

### 2.2 Sample Test Preparations

The aluminum foil packaging was removed from the airKrete sample and the sample in the glass dish was placed into the emissions chamber upon receipt. The sample had the following dimensions:

#### Sample Dimensions

- 15 cm width
- 20 cm length
- 5 cm depth

The area of the sample exposed for release of emissions was the top surface measuring 15 cm by 20 cm.

### 2.3 Emission Tests

**Dynamic Chamber Emissions Test:** The sample was tested in materials emission dynamic test chambers under the following conditions:

- Chamber Volume .....0.0525 m<sup>3</sup>
- Temperature .....19-20°C
- Humidity .....45 - 50 % RH
- Ventilation .....1.0 air changes per hour

For the emission tests of the sample were:

- the sample was placed in the emissions chamber upon receipt, approximately 105 minutes from manufacture,
- after 24- hours and 96 hour from manufacture the emissions of formaldehyde and VOCs were tested

**Formaldehyde:** Formaldehyde was sampled by collection in distilled water with colourimetric analysis. The detection limits for the formaldehyde emissions tests were 0.003 mg/m<sup>2</sup>.h and 0.002 mg/m<sup>3</sup>.

**Volatile Organic Compound (VOC):** VOCs were sampled by collection on charcoal with analysis by solvent extraction and analysis of the extract by GC/MSD in the scan mode. Peaks were identified using the MS Library Search and concentrations were estimated as toluene equivalents. The detection limits for the VOC emissions tests were 0.065 mg/m<sup>2</sup>.h and 0.04 mg/m<sup>3</sup>.

## 3. EMISSIONS TESTING RESULTS

The emissions test results indicate that neither formaldehyde nor volatile organic compounds are emitted from the airKrete insulation at 24 hours and 96 hours from manufacture.