



AC11 - Evaluating Recycled Plasterboard Prototypes to assess Thermal and Moisture Performance

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For First Option Services

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Introduction

First Option Services have been working on the use of re-cycled plasterboard. Glasgow Caledonian University has assisted First Options Services by measuring the thermal conductivity of shredded plasterboard and assessing its potential use as insulation.

Test Procedure

Thermal conductivities were measured using a Lasercomp Fox314, which is suitable for insulating materials with a maximum thickness of 102mm (Figure 1). The apparatus enables measurements to be carried out to ISO 8301:1991 (Thermal insulation - Determination of steady-state thermal resistance and related properties - Heat flow meter apparatus).

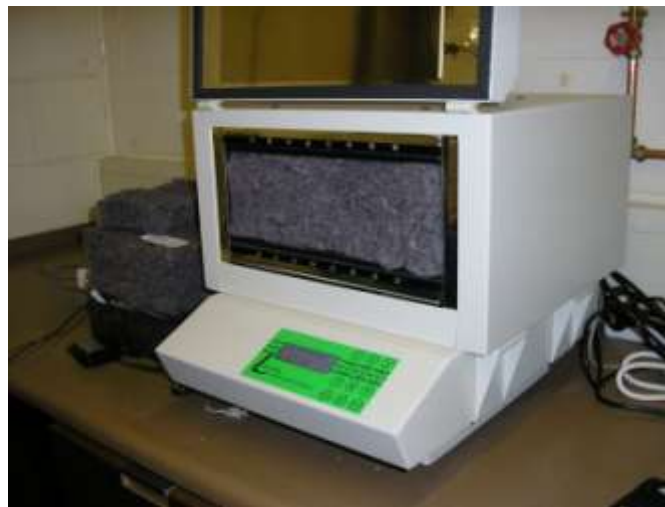


Figure 1. Lasercomp Fox314 thermal conductivity apparatus for insulating materials.

Measurements are usually made with a mean temperature of 10°C, with a cold platen temperature of 0°C and the warm platen at 20°C.

Results & Discussion

The thermal conductivity of the shredded plasterboard sample is 0.074 W/mK at a mean temperature of 10C. Thus its thermal conductivity is nearly twice that of mineral wool, which is 0.04 W/mK.

The density is 205 kg/m³, which is high compared with dense mineral wool or fibre glass insulation has a density of around 40 kg/m³.

The material, as received, is therefore not suitable for use as an insulation product. It is also dusty due to the crushed plaster and would therefore pose health and safety issues.

The moisture properties were not investigated due to the poor thermal performance of the shredded material.