STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
METHODS OF TESTING THERMAL INSULATION

AS 2464.3
THERMAL RESISTANCE OF LOW-DENSITY LOOSE-FILL INSULATION

1 SCOPE. This standard sets out a method of test to determine the thermal resistance of low-density fibrous loose-fill thermal insulation for use in the temperature range –18°C to 55°C. It is primarily intended for use with pneumatically applied thermal insulation, but it may also be used with poured-in-place thermal insulation.

2 APPLICATION. This method is applicable only to fibrous loose-fill thermal insulation, exclusive of any containment, air films or structures.

3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 2352 Glossary of Terms for Thermal Insulation of Buildings

AS 2464 Methods of Testing Thermal Insulation
- 2464.2— Bulk Density of Blown Fibrous Loose-fill Thermal Insulation
- 2464.5— Steady State Thermal Transmission Properties by Means of the Heat Flow Meter
- 2464.6— Steady State Thermal Transmission Properties by Means of the Guarded Hotplate

4 DEFINITIONS. For the purposes of this standard, the definitions given in AS 2352 apply.

5 PRINCIPLE AND GENERAL CONSIDERATIONS.

5.1 Calculations on Installed Condition. The density of a loose-fill insulation is determined in accordance with AS 2464.2. The thermal resistance of the insulation is related to the density and thickness of the insulation. The density of the insulation is related to both the thickness and the method of installation, i.e. blown or poured-in-place. It is therefore desirable to obtain test data on thermal resistance and density at the coverage dimensions as nearly as possible related to the actual use of the product.

5.2 Thermal Conductance. The thermal conductance C of a low-density fibrous loose-fill insulation is determined in accordance with either AS 2464.5 or AS 2464.6. This thermal conductance is used to calculate the thermal resistance of the product.

5.3 Thermal Resistance. As a practical method of describing the thermal properties of the products as normally used, the thermal resistance R of these materials is measured at the thickness of use.

5.4 Homogeneity. The use of thermal conductivity is not a proper method for expressing the insulating properties of these materials. AS 2352, in defining thermal conductivity k, does so in reference to 'a homogeneous material' and includes the Note: 'Materials may be considered as homogeneous when the value of thermal conductivity is not affected by variations in thickness or in area within the range normally used.'

5.5 Normal Use. Normal use may start from a practical minimum of about 75 mm thick for blown fill in roofs of houses. Test data obtained on a variety of loose-fill products indicate that these products will not always be homogeneous in the terms of the definition at the lower thicknesses at which these products may be used normally.

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