

Likely fire performance of Knauf Earthwool glass mineral wool insulation

Assessment Report

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Executive summary

This Division has examined the information referenced by you on the likely combustibility of Knauf Earthwool glass mineral wool insulation if tested in accordance with AS 1530.1-1994.

Based on data from tests conducted on Knauf Earthwool glass mineral wool insulation products in accordance with ISO 1182: 2010 and a comparative review of the test standards, it is the opinion of this Division that Knauf Earthwool glass mineral wool insulation, tested as “HD – 8 – 8 – ET” and “HD – 32 – 8 – ET”, with binder content not greater than 8%, density not greater than 32 kg/m³, at any thickness, would not be deemed combustible when tested in accordance with AS 1530.1-1994.

Likely fire performance of Knauf Earthwool glass mineral wool insulation

1 Introduction

This report provides the assessment of this Division on the likely combustibility of your Knauf Earthwool glass mineral wool insulation if tested in accordance with AS 1530.1-1994, based upon Exova Warringtonfire test report No. 311313 tested in accordance with BS EN ISO 1182:2010.

2 Supporting Data

2.1 Exova Warringtonfire Document Reference: 311313

A test to BS EN ISO 1182:2010 was conducted on 21 September 2011 on "HD – 32 – 8 – ET" glass mineral wool insulation. The product was 80mm thick and had a density of 32 kg/m³. Document Reference 311313 reported the test results as follows:

Mean furnace temperature rise:	6.8°C
Mean specimen centre temperature rise:	10.6°C
Mean specimen surface temperature rise:	6.3°C
Duration of sustained flaming:	Nil
Mass loss:	9.03%

3 Analysis

3.1 Test methods

The Australian Standard for combustibility AS 1530.1-1994 is based upon the international method ISO 1182:2010. Specimen sizes and details, furnaces, and general test performance of the two standards are identical. Differences exist between AS 1530.1-1994 and ISO 1182:2010 standards in the evaluation of the measurements and the definition of the criteria for "combustible" or "not combustible". ISO 1182 does not specify these criteria nor define either term.

3.2 Test parameters

AS 1530.1-1994 and BS EN ISO 1182:2010 require measurement of the temperatures of the furnace, specimen surface and specimen interior and the duration of any flaming during the test. The mass of the specimen immediately before and after the test must also be recorded. The test duration is at least thirty minutes, and then until the temperatures have reached equilibrium. In AS 1530.1-1994 equilibrium is deemed to be achieved when the temperature change as measured by a thermocouple is no more than two degrees Kelvin over ten minutes, provided that at this stage the specimen centre thermocouple reading is below that of the furnace thermocouple. In ISO 1182 the definition of equilibrium is the same except that it must have been reached by all three thermocouples.

3.3 Test criteria

- AS 1530.1-1994 - The furnace and/or specimen surface temperatures should not show a rise of more than 50 degrees Celsius above their final equilibrium temperatures AND specimens must not show continuous flaming for more than five seconds to not be deemed combustible.
- BS EN ISO 1182:2010 - This standard does not specify any acceptance criteria in the body of the standard. However, Annex A contains "Criteria for evaluation" which it recommends be adopted following further evaluation and experience of the test to ensure an internationally uniform assessment of test results. Annex A recommends that there be maximum allowable temperature rises as recorded by the furnace, specimen surface and specimen centre thermocouples, that the mean duration of sustained flaming should not exceed a specified time and that the average mass loss should not exceed 50% of the average original mass after cooling. Apart from the mass loss criteria no actual numerical values are assigned to the maxima in the criteria.

Based upon the Exova Warringtonfire test to BS EN ISO 1182:2010, "HD – 32 – 8 – ET" glass mineral wool insulation would not be deemed combustible when the fire test results are assessed against the test criteria presented in AS 1530.1-1994.

Density of test specimens may affect the performance when tested to either ISO 1182 or AS 1530.1. "HD – 32 – 8 – ET" and all lower density Knauf Earthwool products have the same composition and percentage of binder by mass. Consequently, any Knauf Earthwool glass mineral wool insulation of lower density than the tested "HD – 32 – 8 – ET" 32 kg/m³ product would contain less combustible content. Any lower density Knauf Earthwool product would perform equally or better when tested to the requirements of BS EN ISO 1182 or AS 1530.1-1994.

The test specimens required for BS EN ISO 1182 and AS 1530.1 are cylindrical, of 45-mm diameter and 50-mm thick. Consequently, as the test specimen dimensions are definite, the thickness of your Knauf Earthwool glass mineral wool insulation batts used in practice would not affect the performance when tested to BS EN ISO 1182 or AS 1530.1-1994.

4 Conclusion

Based on the test results referred to above on your "HD – 32 – 8 – ET" product, it is the opinion of this Division for your Knauf Earthwool glass mineral wool insulation, tested as "HD – 8 – 8 – ET" and "HD – 32 – 8 – ET", with binder content not greater than 8%, density not greater than 32 kg/m³, at any thickness, would not be deemed combustible according to the test criteria specified in Clause 3.4 of AS 1530.1-1994.

5 Term of validity

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References

The following informative documents are referred to in this Report:

- | | |
|-------------------------------|--|
| AS 1530.1-1994 | Methods for Fire Tests on Building Materials, Components and Structures',
Part 1 Combustibility Test for Materials |
| BS EN ISO 1182:2010 | Reaction to fire tests for products. Non-combustibility test |
| Document Reference:
311313 | Exova Warringtonfire Document Reference: 311313 BS EN ISO 1182:2010 Fire
Test For Non-Combustibility Of Building Products |

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