MARSHALL DAY Acoustics

84 Symonds Street
PO Box 5811 Wellesley Street
Auckland 1141 New Zealand
T: +64 9 379 7822 F: +64 9 309 3540
www.marshallday.com

PREPARED FOR: **Building Element Assessment Laboratory**
5-52 Penryn Drive
Camborne
Porirua 5026
Wellington

Attention: Colin Prouse

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PROJECT: **Peer Review of Acoustic Testing of KA PO Super Mineral Board**

REPORT NO.: RP01 R01 2008492

PREPARED BY: Alex Barker

REVIEWED BY: Keith Ballagh

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1.0 INTRODUCTION

Marshall Day Acoustics (MDA) was engaged to provide a peer review of the Sound Transmission Loss test results for the TWLL "KA PO" Mineral Wallboard Partition (12 mm and 16 mm thick varieties) as performed by Intertek Testing Services Ltd. MDA was also engaged to estimate the performance of the 6 mm product of the same material, based on the test result of the 12 mm product. This opinion is based on theoretical models for the sound transmission properties of double panel walls and test data performed by Intertek Testing Services.

2.0 CONSTRUCTION

The partition for which the opinion is provided, and from which the Intertek test data was obtained, is specified in this excerpt from the Intertek report:

> *"The test specimen consisted of a 4 foot wide by 8 foot high by 6 ½ inch thick partition. The partition was double framed using 2 inch x 4 inch and 2 inch x 2 inch studs separated by a nominal ½ inch airspace. A mineral fibre insulation was used in the cavity."*
>
> *Both faces of the partition consisted of TWLL "KA PO" mineral wallboard described by the client as ½ inch thick composite, 4 foot by 8 foot sheet material with fibreglass mat reinforcing on the faces. The density is approximately 60 pounds per cubic foot. There is a smooth (exposed) side and a rough back."*

In each case, both faces of the partition consist of the TWLL "KA PO" mineral board, of the relevant thickness.

3.0 DISCUSSION

3.1 Intertek Test Results

According to the Intertek test report (report no. 3088788CRT-001), the ½" mineral board specimen was tested and classified under the American Society for Testing and Materials designations ASTM E90-2004 and ASTM 413-04. The Sound Transmission Class (STC) of each tested variety is shown in Table 1 below. Note the 5/8" result is an estimate based on the test date for the ½" board.

Table 1: Mineral Board STC values from Intertek test report

"KA PO" Mineral Board Thickness	Sound Transmission Class of Wall Assembly
½ in. (12 mm)	49
5/8 in. (16 mm)	50 or Greater*

*Estimated

3.2 Theoretical Models

The sound transmission loss of a double panel wall is determined by the surface mass of the linings on each side, the stiffness and hence critical frequency of the linings, the air gap between linings, and the type of acoustic absorption within the cavity. In this case the sound transmission loss has been estimated from the tested wall with adjustments for the increase in mass of the linings and the change in cavity absorption and resilient fixings using theoretical models. Details of these theoretical models are available from Marshall Day Acoustics on request.

4.0 OPINION

Intertek is accredited by the National Voluntary Laboratory Accreditation Program which is a well known and respected accreditation system. The tests have been carried out in accordance with the appropriate ASTM standards, which are applicable to the current requirements of the NZ Building Code (G6). Therefore, in our opinion, the test data for the ½" thick board is directly applicable for New Zealand conditions.

Independent calculations carried out by Marshall Day Acoustics confirm that the estimate for 5/8" (16mm) board is consistent with the test data for ½" board.

The estimated laboratory performances of the partition described in Section 2 when constructed with 6 mm TWLL "KA PO" mineral board is shown in Table 2 below.

Table 2: Estimated Mineral Board STC values

"KA PO" Mineral Board Thickness	Sound Transmission Class of Wall Assembly
5/8 in. (16 mm)	50
1/4 in. (6 mm)	43

5.0 LIMITATIONS

The above opinion is an estimate of the laboratory performance not the field performance. In field installations, flanking may determine the sound reduction between spaces rather than the partition. The estimate is based on the materials as currently manufactured and the construction details set out above. Readers are advised to check that this opinion has not been revised by a later issue. The estimate is expected to be in error by less than ± 2 STC. This opinion may be reproduced in full but not in part without the written consent of Marshall Day Acoustics Ltd.