ACOUSTICS & NOISE CONTROL CONSULTANCY

171-B Titirangi Road, New Lynn, Auckland, New Zealand.
Phone & Facsimile: (09) 827 2306, email: davepaterson@xtra.co.nz

16th October, 2001.

N.Z/. Woodtex Ltd.
P.O. Box 109
Ngaruawahia.

Attention: Mr Les Evitts.

Dear Sir,

RE: Sound Absorption of WOODTEX using the Impedance Tube Method.

The sound absorption of Woodtex has been determined for a range of thicknesses and mounting conditions for the Natural (Coarse Grain), and one test on the Cameo (Fine Grain) products. The test samples were cut from the supplied sheets, and prepared to give a press fit all around the sample in the test holders, that is there were no air gaps at the edge of the samples due to preparation cutting. The tests conducted were as follows, with the single figure sound absorption average included in the table:

Sample	Thickness	Space behind	NRC*	SAA**.
Natural	50	0	0.58	0.53
Natural	50	50	0.57	0.65
Natural	100	50	0.70	0.75
Natural	100	50 + 35mm Autex, 35-35	0.67	0.72
Cameo	75	75	0.57	0.56

NRC* = Noise Reduction Coefficient, average of absorptions, 250 to 2000 Hz octave bands,
SAA** = Sound Absorption Average, average of absorptions, 200 to 2500 Hz third octaves.

The independent results of the sound absorption measurements are given on separate sheets. The graphs accompanying those tests clearly show the character of the sound absorption curves, with the 100mm thick Natural fibre with an airspace of 50 mm behind it on a solid backing gave the highest overall sound absorption, especially at low frequencies where it performs very well within the range of typical engine exhaust sounds from motorway traffic. It also absorbs sound very well at frequencies where tyre noise is predominant around 500 to 2000 Hz.
It should also be noticed that the 50 mm thick Natural fibre with an airspace of 50 mm behind it also gives a significantly good sound absorption, exceeding an NRC of 0.57 (Statistical, a result close to what a Reverberant Room Test would give).

Yours faithfully,

A.D. Paterson
Acoustics Consultant.

Principal: A. David Paterson. Consultant in acoustics, sound systems, machinery noise and vibration.
171-B Titirangi Road, New Lynn, Auckland 7, New Zealand, Telephone and Facsimile: 0064 9 827 2306.

ZTUBECAL10.WKB 08.03.2000

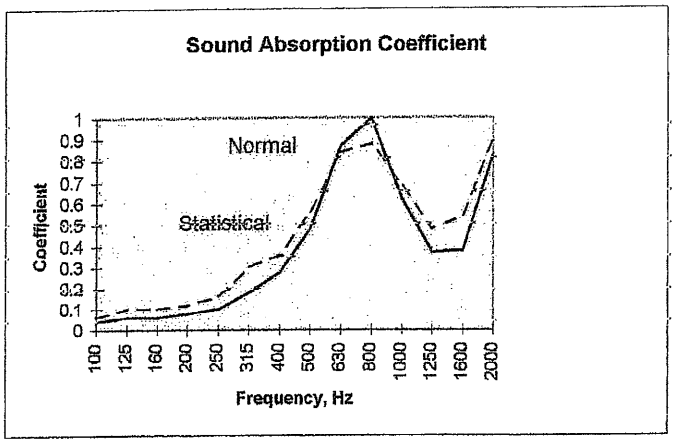
Acoustics & Noise Control Consultancy
171-B Titirangi Road, New Lynn, Auckland.
Phone & Fax: 09 827 2306.

Data entry and calculating procedures to AS1935:1976, for standing wave acoustic sound absorption determination.

Date:	10.10.2001
Job No.:	AC223
Client:	N.Z. Woodtex Ltd
Address/Box#:	P.O. Box 109
Town/City:	Ngaruawahia.
Contact name:	Les Nisbett/Terry Patterson
Phone #:	07 824 8789
Test Number:	1
Sample material:	Woodtex, 50 mm thick on solid backing.
Material thickness, cm:	5
If airspace, depth, cm:	0

For Graphing:

Frequency, Hz.	Alpha Normal	Alpha Statistical
100	0.04	0.06
125	0.06	0.1
160	0.06	0.1
200	0.08	0.12
250	0.1	0.16
315	0.18	0.3
400	0.28	0.36
500	0.48	0.56
630	0.87	0.84
800	1	0.88
1000	0.62	0.68
1250	0.37	0.48
1600	0.38	0.54
2000	0.83	0.9
NRC=	**0.51**	**0.58**



ZTUBECAL10.WKB 08.03.2000

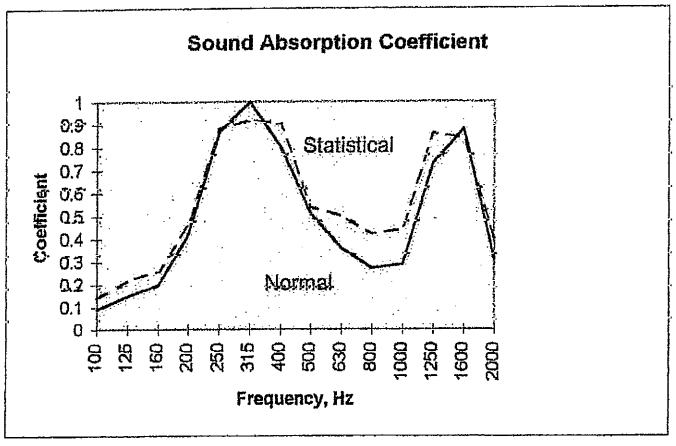
Acoustics & Noise Control Consultancy
171-B Titirangi Road, New Lynn, Auckland.
Phone & Fax: 09 827 2306.

Data entry and calculating procedures to AS1935:1976, for standing wave acoustic sound absorption determination.

Date:	10.10.2001
Job No.:	AC223
Client:	N.Z. Woodtex Ltd
Address/Box#:	P.O. Box 109
Town/City:	Ngaruawahia.
Contact name:	Les Nisbett/Terry Patterson
Phone #:	07 824 8789
Test Number:	2
Sample material:	Woodtex, 50 mm thick on 50 mm airspace behind sample.
Material thickness, cm:	5
If airspace, depth, cm:	5

For Graphing:

Frequency, Hz.	Alpha Normal	Alpha Statistical
100	0.09	0.14
125	0.15	0.22
160	0.2	0.26
200	0.42	0.46
250	0.87	0.88
315	1	0.92
400	0.8	0.9
500	0.51	0.54
630	0.36	0.5
800	0.27	0.42
1000	0.29	0.44
1250	0.73	0.86
1600	0.88	0.84
2000	0.31	0.4
NRC=	0.5	0.57



ZTUBECAL10.WKB 08.03.2000

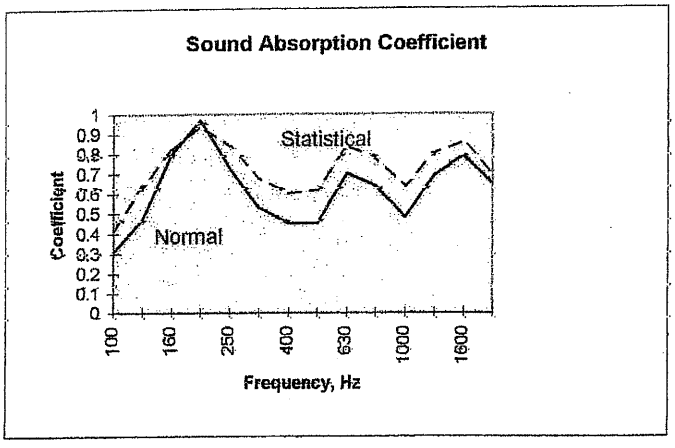
Acoustics & Noise Control Consultancy
171-B Titirangi Road, New Lynn, Auckland.
Phone & Fax: 09 827 2306.

Data entry and calculating procedures to AS1935:1976, for standing wave acoustic sound absorption determination.

Date:	10.10.2001
Job No.:	AC223
Client:	N.Z. Woodtex Ltd.
Address/Box#:	P.O. Box 109
Town/City:	Ngaruawahia.
Contact name:	Les Nisbett/Terry Patterson
Phone #:	07 824 8789
Test Number:	3
Sample material:	Woodtex, 100 mm thick on 50 mm airspace behind sample.
Material thickness, cm:	10
If airspace, depth, cm:	5

For Graphing:

Frequency, Hz.	Alpha Normal	Alpha Statistical
100	0.31	0.42
125	0.47	0.64
160	0.8	0.82
200	0.97	0.94
250	0.73	0.84
315	0.53	0.68
400	0.45	0.6
500	0.45	0.62
630	0.7	0.84
800	0.64	0.78
1000	0.48	0.64
1250	0.69	0.8
1600	0.79	0.86
2000	0.65	0.7
NRC=	0.58	0.7



ZTUBECAL10.WKB 08.03.2000

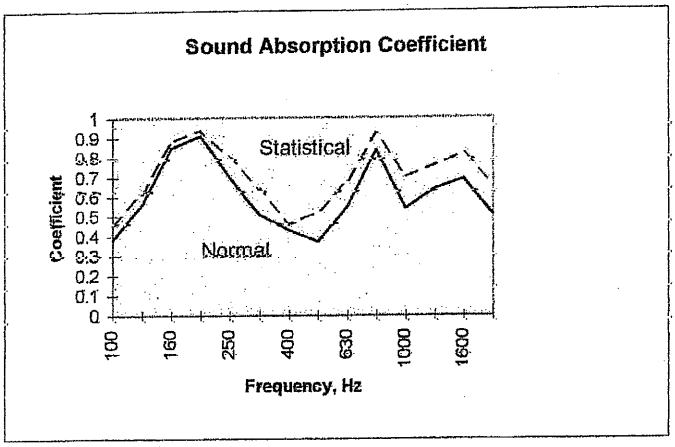
Acoustics & Noise Control Consultancy
171-B Titirangi Road, New Lynn, Auckland.
Phone & Fax: 09 827 2306.

Data entry and calculating procedures to AS1935:1976, for standing wave acoustic sound absorption determination.

Date:	11.10.2001
Job No.:	AC223
Client:	N.Z. Woodtex Ltd.
Address/Box#:	P.O. Box 109
Town/City:	Ngaruawahia.
Contact name:	Les Nisbett/Terry Patterson
Phone #:	07 824 8789
Test Number:	4
Sample material:	Woodtex, 100 mm thick on 50 mm airspace behind sample, with 35-35 Autex in cavity.
Material thickness, cm:	10
If airspace, depth, cm:	5 including the 35mm, 35kg/m^3 Autex directly behind the Woodtex.

For Graphing:

Frequency, Hz.	Alpha Normal	Alpha Statistical
100	0.38	0.46
125	0.56	0.62
160	0.85	0.88
200	0.91	0.94
250	0.7	0.8
315	0.51	0.64
400	0.43	0.46
500	0.37	0.52
630	0.55	0.68
800	0.84	0.92
1000	0.54	0.7
1250	0.64	0.76
1600	0.69	0.82
2000	0.51	0.66
NRC=	0.53	0.67



ZTUBECAL10.WKB 08.03.2000 Acoustics & Noise Control Consultancy
171-B Titirangi Road, New Lynn, Auckland.
Phone & Fax: 09 827 2306.

Data entry and calculating procedures to AS1935:1976, for standing wave acoustic sound absorption determination.

Date:	15.10.2001
Job No.:	AC223
Client:	N.Z.Woodtex Ltd.
Address/Box#:	P.O. Box 109
Town/City:	Ngaruawahia.
Contact name:	Les Nisbett/Terry Patterson
Phone #:	07 824 8789
Test Number:	5
Sample material:	Woodtex, Acoustic grade, 75 mm thick on 75 mm airspace behind sample.
Material thickness, cm:	7.5
If airspace, depth, cm:	7.5

For Graphing:

Frequency, Hz.	Alpha Normal	Alpha Statistical
100	0.13	0.18
125	0.18	0.22
160	0.29	0.32
200	0.49	0.42
250	0.74	0.62
315	0.83	0.66
400	0.69	0.6
500	0.48	0.52
630	0.4	0.38
800	0.26	0.4
1000	0.53	0.62
1250	0.79	0.78
1600	0.55	0.64
2000	0.36	0.52
NRC=	**0.53**	**0.57**