



CSIRO

REPORT OF FIELD MEASUREMENT OF SOUND PRESSURE LEVEL

MEASUREMENT NO: SPL140

DATE OF MEASUREMENT: 29 August 2002

COMMISSIONED BY: Polyplas Pty.Ltd.
Unit 7/21 Stud Road
Bayswater
Vic, 3153

SUMMARY

The maximum sound pressure level L_{max} of two identical manually actuated alarm bells, that were tested on two separate cool room doors in a semi-reverberant environment, has been determined.

The measurements were performed in compliance with the requirements of Australian Building Codes Board "Deemed to Satisfy Provision, Section G - Ancillary Provisions, Part G1.2 - Refrigerated Chambers, Strong Rooms and Vaults".

© 2002 CSIRO

To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

While CSIRO takes care in preparing the reports it provides to clients, it does not warrant that the information in this particular report will be free of errors or omissions or that it will be suitable for the client's purposes. CSIRO will not be responsible for the results of any actions taken by the client or any other person on the basis of the information contained in the report or any opinions expressed in it.

METHOD OF TEST

The method complies with the requirements of Australian Building Codes Board "Deemed to Satisfy Provision, Section G - Ancillary Provisions, Part G1.2 - Refrigerated Chambers, Strong Rooms and Vaults".

ENVIRONMENTAL CONDITIONS

Temperature: 13.2° C
Relative Humidity: 65 %
Barometric Pressure: 1015 hPa

DESCRIPTION OF APPARATUS AND INSTRUMENTATION

Test Environment

The test environment was selected to be similar to a typical semi-reverberant commercial situation with hard floor and wall surfaces, and had a volume of approximately 300 m³.

Microphone

A (Brüel & Kjær Type 4166) condenser microphone with matching (Brüel & Kjær Type 2619) preamplifier was used. The microphone was mounted on a 1.6 m high tripod that was moved to three different angular locations for each measurement, 45°, 90° and 135° from the plane of the door onto which each alarm bell was mounted, and all 3 m distant. The microphone was powered from the NE 830 analyzer and the sensitivity of the signal channel was adjusted to read absolute dB re 20 µPa prior to measurement by using a Brüel & Kjær type 4220 pistonphone. The National Measurement Laboratory of CSIRO had calibrated the pistonphone in March 1997.

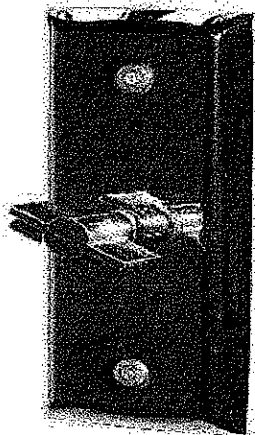
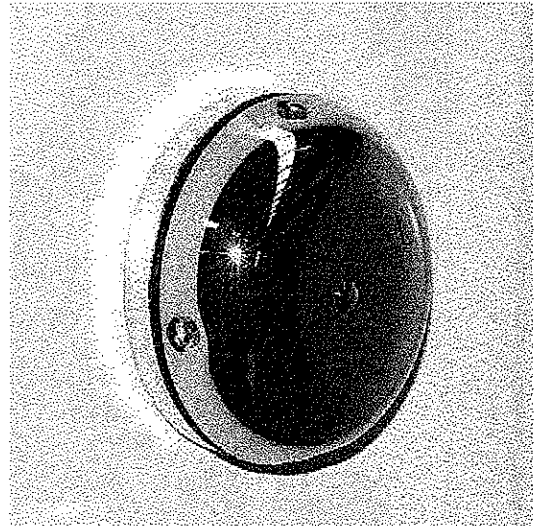
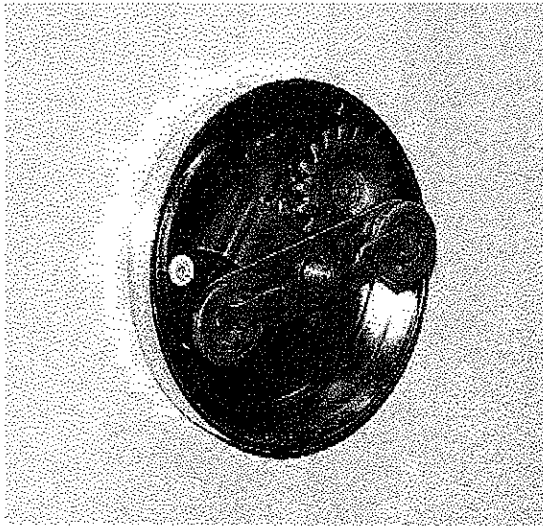
Real Time Analyzer: Norwegian Electronics 830. The maximum sound pressure levels were measured over three separate 10 s manual operations for each alarm bell (30 s).

DESCRIPTION OF SPECIMENS TESTED

Two identical alarm bells were tested, each installed on its own cool room door. The cool room doors were of two different thicknesses and of typical construction for the purpose; polystyrene core with sheet metal cladding.

The body of the alarm was of pressed brass whilst the 77 mm diameter screw-on domed bell section was of chrome plated brass. The alarm was made to operate by manually actuating a rotary external trigger, which caused rotating hammers to strike four indented notches inside the brass bell. The specimens tested were:

- (a) Alarm bell installed on 75 mm thick cool room door.
- (b) Alarm bell installed on 150 mm thick cool room door.



MEASUREMENTS

The maximum measured sound pressure levels in third octave bands and the maximum A-weighted sound levels presented in table 1 were obtained from the three 10 s operations of each of the alarm bells, with the microphone location angles of 45°, 90° and 135° from the alarm bells, and all 3 m distant.

Freq Hz	Measured Maximum SPL's					
	Specimen (a)			Specimen (b)		
	45°	90°	135°	45°	90°	135°
80	54.5	55.0	54.7	57.7	58.4	60.8
100	70.6	76.6	73.8	63.0	65.9	62.5
125	66.4	70.6	67.8	75.2	79.9	76.9
160	67.7	72.6	68.0	73.9	73.8	73.9
200	67.8	69.0	68.0	74.5	76.5	72.4
250	69.3	69.7	71.2	83.5	81.6	80.2
315	69.0	67.0	68.5	86.6	74.6	77.7
400	65.4	65.9	68.7	73.1	73.0	73.3
500	67.9	66.8	67.6	69.1	70.9	70.3
630	69.1	68.5	69.7	78.3	77.9	78.8
800	69.5	68.0	68.8	81.4	80.7	80.8
1000	79.5	76.3	76.4	71.1	72.3	73.4
1250	68.6	70.7	71.1	68.6	68.6	68.4
1600	66.5	69.3	68.9	68.5	70.0	70.3
2000	71.4	68.3	73.7	69.9	69.8	68.4
2500	84.7	79.2	87.1	79.5	83.5	80.3
3150	76.7	75.0	75.5	76.6	75.3	75.7
4000	83.6	94.3	84.1	88.7	93.1	90.0
5000	78.8	86.8	79.7	83.9	88.4	85.7
6300	90.2	97.5	92.1	90.8	93.9	91.2
8000	93.7	95.0	90.8	90.9	91.8	96.6
10000	94.8	99.7	95.9	95.4	95.8	97.5
L_{max} dB(A)	96.3	100.9	96.9	96.1	98.7	99.2

Table 1. Measured maximum sound pressure levels, L_{max} re 20 µPa.

[Handwritten Signature]

Officer conducting measurement

11/9/2002

[Handwritten Signature]

Checked by

11/9/2002