

## 410 - Earplugs Blue 3 Flange

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### Declaration of Compliance Statement - 410 - Detectable 3 Flange Earplugs

Product Code	Product Description
410-P20-S102-X18	Detect Earplugs Blue Cord. 2 Blue Plugs 3 Flange Box200
410-P21-S102-X18	Detect Earplugs Blue Cord. 1 Blue/1 Red Plug 3 Flange Box200
410-P23-S102-X18	Detect Earplugs Red Cord. 1 Red/1 Blue Plug 3 Flange Box200
410-P22-S102-X18	Detect Earplugs Red Cord. 2 Red Plugs 3 Flange Box200

### Data of Detectable Silicone Extruded Cord

Property	Units	Typical Value	Test Method
<b>Hardness</b>	SHORE A	67	ASTM D2240
<b>Tensile Strength</b>	MPa	9.0	BS ISO 37
<b>Elongation to Break</b>	%	340	BS ISO 37
<b>Tear Strength</b>	N/mm	15.7	BS ISO 34-1 method C
<b>Compression Set 25% for 24hrs @ 150c</b>	%	14.1	BS 903 pt A6 type B
<b>Magnetic Pull</b>	Mm	6.5	SEWI/700 ISS 2
<b>Temperature</b>	C	-60 to 200	

### Colour Dark Blue 60 Shore

The above product contains only ingredients that are listed by the American food and drugs administration (FDA) under the 21 CFR number 177-2600 & EC1935/2004

### Technical Report

Testing of earplugs in accordance with EN352-2:2002 referenced 410-xxx-s102-xxx ( three flange ear plug) as part of STE0330951 (Detectamet).

### Work Requested

Samples pf earplugs, reference 410-P20-S102-X18, were received by SATRA, for testing in accordance with BS EN 352-2:2022 Hearing protectors - General requirments -Part 2: Earplugs.

Samples were obtained by Detectamet Ltd.

## Conclusions

Standard	Clause/Property	Result
BS EN 352-2:2002	4.3.6 Minimum attenuation	Pass

## Testing

Testing was carried out in accordance with BS EN 352-2:2002. Unless otherwise specified either in the individual test method or in this report, samples were tested 'as received', after conditioning, and tested under normal ambient conditions.

## Test Results

Clause/Test	Requirement	Test Results	UoM (See note 2)	Result
4.3.6 Minimum attenuation	When tested in accordance with EN 13819-2:2002, 4.2, the values ( $M_f - S_f$ ) of the earplugs shall not be less than the values shown in table 1 of BS EN 352-2:2002. See note 1.	The earplugs met the minimum attenuation requirements of BS EN 352-2:2002.	31%	Pass

## Additional Information/Notes

Table 1 of BS EN 352-2:2002

Frequency (Hz)	125	250	500	1000	2000	4000	8000
$M_f - S_f$ (in dB)	5	8	10	12	12	12	12

**Note 1** Documentation to be assessed as part of the technical file during the EU type examination assessment.

**Note 2** 'UoM' denotes estimated uncertainty of measurement for stated test results. This uncertainty value is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , which provides for a confidence level of approximately 95%.

## Appendix: Subjective Attenuation Testing

### Introduction

BS EN 24869-1:1993 (ISO 4869-1:1990) specifies a subjective method for measuring the attenuation of hearing protection at the threshold of hearing. This method was applied to the samples provided for testing.

### Test Subjects

The testing was conducted on sixteen test subjects, as specified by the test standard. The subjects comprised both males and females over a wide range of ages. All subjects were audiometrically screened in accordance with clause 4.4.1 of BS EN 24869-1:1993 prior to the test.

### Fitting

Manufacturer's instructions were provided to the test subjects and followed during the fitting of the device. Guidance was also available from the test engineer.

### Test Procedure

The procedure specified in BS EN 24869-1:1993, 4.5 was followed.

**Results**

Subject	Sample	Frequency, Hz/ Attenuation, dB re 20 µPa							
		63	125	250	500	1000	2000	4000	8000
A	1	26	24	24	26	30	32	32	22
B	2	6	6	8	10	16	24	20	12
C	3	10	10	4	10	18	22	22	16
D	4	24	28	22	24	28	34	34	42
E	5	16	20	20	26	22	34	34	42
F	6	24	20	22	16	24	34	32	32
G	7	18	22	22	24	22	24	32	14
H	8	22	18	18	20	22	36	32	28
Mean attenuation		18.3	18.5	17.5	19.5	22.8	30.0	29.5	25.5
Standard deviation		7.2	7.2	7.4	6.7	4.7	5.7	5.3	11.3
Assumed protection		11.0	11.3	10.1	12.8	18.1	24.3	24.2	14.2

SNR = 19		H = 20	M = 17	L = 13
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