

DETECTAMET

Technical Data Sheet

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410 Detectable 3 Flange Earplugs



Technical Data Sheet Applicable To:

410-P20-S102-X18	Detectable Earplugs Blue Cord. 2 Blue Plugs 3 Flange Box 200
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Industry Usage:

These earplugs are suitable for use in loud environments within food factories, helping to protect your hearing in certain situations.

Features and Benefits:

- Metal Detectable & X-ray visible earplug & cord
- Available loose or corded
- Cord length 600mm (23.62")
- SNR Rating: 22dB
- Durable and Non-Toxic

Material and Compliance information:

Property	Units	Typical Value	Test Method
Hardness	Shore A	67	ASTM D2240
Tensile Strength	MPa	9.0	BS ISO 37
Elongation to break	%	340	BS ISO 37
Tear Strength	N/mm	15.7	BS ISO 34-1 method C
Compression Set 25% for 24hrs @ 10c	%	14.1	BS 903 pt A6 type B
Magnetic Pull	Mm	6.5	SWEI/700 ISS 2

Temperature	C	-60 to 200	
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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 & EC 1935/2004

Technical Report

Testing Requirements

Regulation 2016/425 Module C2 limited testing of 3-flange earplugs described as 410-P20-S120-X18 in accordance with EN 352-2:2020

Work Requested

Samples of earplugs, reference 410-P20-S102-X18, were received by a third party tested for Module C2 testing in accordance with BS EN 352-2:2020 Hearing protectors – General requirements ; Part 2; Earplugs Clause 4.1 and Sizing and adjustability and 4.3.6 Minimum attenuation.

Conclusions

Standard	Clause/Property	Result
BS EN 352-2:2020	4.1 Sizing and adjustability	Pass
	4.3.6 Minimum attenuation	Pass

Testing

Testing was carried out in accordance with BS EN 352-2:2020

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.

The average mass of the samples was 4.5g

Test results

Clause/Test	Requirement	Test Results	Result
4.1.1. Sizing and adjustability. Aural earplugs	The nominal diameter or, if appropriate, the range of nominal diameters of the earplugs shall be tested in accordance with EN 13819-1:2002, 5.2 and reported.	The earplugs fit the sizing specification from 8.0mm to 11.0mm	Pass
4.3.6 Minimum attenuation	When tested in accordance with EN 13819-2:2002, 4.2, the values (Mf – Sf) of the earplugs shall not be less than the values shown in table 1 of BS EN 352-2:2020. See note 1.	The earplugs met the minimum attenuation requirements of BS EN 352-2:2020 (see Appendix A)	Pass

Additional information / Notes

Table 1 of BS EN 352-1:2020

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Mf-Sf (dB)	5	8	10	12	12	12	12

Uncertainty of measurement is detailed in the table below. Test where estimated uncertainty of measurement is applied at point of test (e.g. to applied force or to tolerance limits) to ensure product meets requirements of the standard are detailed.

Additional uncertainty of measurement information

Clause/test	Property	UoM
4.1 Sizing and adjustability	Weight	+/- 0.0022g
4.3.6 Minimum attenuation	Assumed Protection Values	19% of minimum result

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

		Frequency (Hz) / Attenuation (dB, re. 2×10^{-5} Pa)							
Subject	Sample	63	125	250	500	1000	2000	4000	8000
A	1	14	12	12	14	20	24	26	26
B	2	16	16	20	18	26	36	38	46
C	3	22	20	24	28	20	26	26	38
D	4	34	36	30	28	24	42	42	46
E	5	24	16	24	18	22	24	32	38
F	6	32	30	28	30	26	32	32	48
G	7	12	22	18	18	22	32	32	40
H	8	18	22	20	30	24	28	26	42
I	9	24	30	26	26	26	30	26	40
J	10	20	24	18	20	22	24	38	36
K	11	18	14	16	22	24	34	38	32
L	12	24	22	20	20	20	20	28	16

M	13	40	34	36	36	38	40	52	42
N	14	14	16	22	18	20	12	30	28
O	15	18	20	24	26	22	34	28	30
P	16	18	20	20	20	20	32	34	34
Mean Attenuation		21.8	22.1	22.4	23.3	23.5	29.4	33.0	36.4
Standard deviation		7.8	7.1	5.8	6.0	4.5	7.6	7.2	8.5
Assumed protection (a=1)		14.0	15.0	16.6	17.3	19.0	21.8	25.8	27.9
Assumed protection (a=2)		6.2	7.9	10.8	11.3	14.5	14.2	18.6	19.4

Subject	Sample	H	M	L	SNR
A	1	24.2	18.2	14.5	21.0
B	2	32.9	23.5	20.2	27.0
C	3	25.5	22.5	23.0	25.4
D	4	33.4	26.7	27.7	31.0
E	5	25.9	21.7	20.4	24.7
F	6	31.5	28.1	28.4	31.1
G	7	29.3	21.9	19.8	25.5
H	8	27.4	25.4	23.5	27.5
I	9	28.3	26.7	26.6	28.6
J	10	26.2	22.3	20.5	25.2
K	11	31.5	23.9	18.9	27.0
L	12	20.0	20.3	20.3	20.9
M	13	41.5	38.4	36.8	40.9
N	14	15.0	16.8	17.7	17.8
O	15	28.5	24.4	23.9	27.4
P	16	28.3	21.7	20.7	25.4
Mean attenuation		28.1	23.9	22.7	26.7
Standard deviation		5.9	4.9	5.3	5.2
Assumed protection (a=1)		22.2	19.0	17.4	21.5
Nominal value		22	19	17	22

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