

## 410-Metal Detectable Reusable Earplugs - SNR 32 dB & NRR 25 dB

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**These reusable earplugs are 100% metal detectable, including the cord. Offers 3 flange protection at SNR 32 dB, perfect for noisy processing environments.**

SNR 32 dB (EN352-2:2020) EU Approved Hearing Protection.

NRR 25 dB (EN352-2:2020) US Approved Hearing Protection

Product Code	Product Description
410-P01-1412-X29	Detect Earplugs Blue Cord. 2 Blue Plugs 3 Flange Box250

### 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

### CE Test Report

Attenuation measurements have been performed according to the European Standards EN352- 2:2020 on the Guangzhou Junyue Foam Earplug Co. Ltd. JY090/JY090C(cotton cord)/ JY090C(PVC cord)/ JY090C(nylon cord)/JY090D/JY090CD/JY090CM insert-type hearing protector (test ID Q5970A). The specified threshold measurement data were obtained using sixteen normally-hearing listeners. These listeners were selected as specified in EN352-2:2020.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in EN352-2:2020. The ambient noise levels in this room are below the limits specified in EN352-2:2020, and open ear thresholds are used on a continuing basis to monitor the background noise levels. An automatic recording attenuator was used to record both open and occluded ear thresholds.

Each of the sixteen subjects was tested at each of seven test frequencies. The attached Tables show mean and standard deviation attenuation values in decibels (dB) for each test signal. The results presented in this report pertain to the samples tested only. (NIST) National Laboratory Accreditation Program (NVLAP) for tests performed according to AS/NZ S1270:2002, ANSI S3.19-1974, ANSI S12.6-2016, ANSI S12.42-2010 and EN352 parts 1-8. These accreditation criteria encompass the requirements of international standard ISO 17025. This report may only be reproduced or transmitted electronically in its entirety. This report shall not be used to claim product approval, certification or endorsement by NVLAP or by any agency of the U.S. Government. Accreditation documentation can be viewed at

*Use these laboratory-derived attenuation data for comparison purposes only. The amount of protection afforded in field use is often significantly lower depending on how the protectors are fitted and worn.*

## Work Requested

Manufacturer: Detectamet  
 Model: 401-P  
 Test ID Number: Q5970A  
 Date of receipt: 10/24/2019  
 Dates of testing: 10/24/2019-11/11/2019  
 Type of product: Earplug  
 Wearing position: Insert

Unpack, Weigh, Condition all samples Mass (g) 1.9

## Sizing and Adjustability

Sample	Smallest Diameter	Largest Diameter
Sample 1	8 mm	12 mm

## Conclusions

Standard	Result
Materials	Pass
Construction	Pass
Conditioning	Pass

## Resistance to damage when dropped

The earplugs did not crack, nor did any parts of the earplugs detach when dropped.

## 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.

## Resistance to damage when dropped at low temperature

This test was not performed as it is optional.

Test	Result
Cleaning and disinfection	Pass

## Ignitability

Upon application of the heated rod, no part of the earplugs ignited or continued to glow after removal of the heated rod.

## Minimum Attenuation

Pass, See Appendix A for data.

Test	H	M	L
Limit	12	11	9

Mean-2\*5D>0 for all test frequencies, marking and Info Provided by Manufacturer Not assessed.

Estimates of Uncertainty	
Sizing	+ - 1 mm
Weight	+ - .01 g
Semi-aural headband force	+ - .1 lb (.45 N)
REAT attenuation	+ - 3 dB

## Test Procedure

EN352-2:2020

## Appendix A Results

Sample	Attenuation in dB FREQUENCY IN HERTZ						
	125	250	500	1000	2000	4000	8000
1	31.0	23.9	30.1	29.7	36.9	33.5	45.4
2	32.1	27.3	27.1	27.0	39.0	42.9	44.2
3	26.7	22.6	24.8	27.8	31.1	33.4	51.3
4	35.5	32.2	34.1	34.7	41.5	46.9	47.8
5	37.2	34.4	38.2	38.8	35.0	40.8	42.1
6	41.9	40.2	38.8	35.7	37.7	43.4	47.8
7	37.7	35.5	39.7	38.2	31.8	44.0	50.6
8	27.9	24.1	28.1	28.8	35.9	37.8	50.2
9	39.0	34.1	35.8	34.5	37.1	48.3	48.1
10	25.4	26.8	28.9	30.1	33.3	33.3	42.8
11	26.3	24.1	27.7	27.9	32.1	34.9	35.4
12	37.6	31.4	41.4	33.4	34.2	43.9	43.9
13	37.0	35.4	40.5	34.3	28.0	32.5	44.3
14	34.7	37.4	37.4	33.2	41.8	39.1	41.1
15	33.1	28.4	32.2	31.4	34.0	33.1	41.0
16	35.3	31.2	33.8	32.9	38.1	39.8	49.1

Assumed Protection Value							
Mean	33.7	30.6	33.7	32.4	35.5	39.2	45.3
STD. DEV.	5.0	5.4	5.4	3.6	3.8	5.3	4.3
Mean - SD	28.7	25.2	28.3	28.8	31.7	33.9	41.0

SNR<sub>m</sub> = 35.5  
 SNR<sub>s</sub> = 3.2  
 SNR<sub>(dB)</sub> = 32.0

Test Report					
H84 (dB)=	33 dB	H <sub>m</sub> =	35.8	H <sub>s</sub> =	3.1
M84 (dB)=	30 dB	M <sub>m</sub> =	33.0	M <sub>s</sub> =	3.3
L84 (dB)=	28 dB	L <sub>m</sub> =	32.1	L <sub>s</sub> =	4.2

## ANSI Test Report

Attenuation measurements have been performed according to the American National Standards Institute (ANSI) Specifications, ANSI S3.1 9-1 974, using the experimenter-fit protocol, on the Metal Detectable Reusable Earplugs (test ID Q2670A). The specified threshold measurement data were obtained using ten normally-hearing listeners, six male and four female. These listeners were selected from a standby group of about 35 volunteers, mostly graduate students, who regularly serve as listeners for measurements of this kind.

The measurements were made in a room designed for this purpose. All acoustic characteristics of the room meet the requirements outlined in ANSI S3.1 9-1 974. The ambient noise levels in this room are below the limits specified in ANSI S3.1 9-1 974, and open ear thresholds are used on a continuing basis to monitor the background noise levels. An automatic recording attenuator was used to record both open and occluded ear thresholds.

Each of ten subjects was tested three times at each of nine test frequencies. The attached Tables show grand mean attenuation values in decibels (dB) for each test signal along with group attenuation values. Standard deviations (S.D.) for the 30 different attenuation determinations for each test signal are also given. The results presented in this report pertain to the samples tested only. Michael & Associates is accredited by the National Institute of Standards and

Technology (NIST) National Laboratory Accreditation Program (NVLAP) for tests performed according to ANSI S3.1 9-1 974, ANSI S 12.6-2008, AS/NZ S 1270:2002 and EN352 parts 1-8.

These accreditation criteria encompass the requirements of international standard ISO 17025. This report may only be reproduced or transmitted electronically in its' entirety. This report shall not be used to claim product endorsement by NIST, NVLAP or by any agency of the U.S. Government. All measurement equipment are calibrated with instrumentation traceable to the NJST.

*Use these laboratory-derived attenuation data for comparison purposes only. The amount of protection afforded in field use is often significantly lower depending on how the protectors are fitted and worn.*

## Individual and Summary Attenuation Data for Hearing Protective Devices Test Method: ANSI S3.19-1974

Sample	FREQUENCY IN HERTZ								
	125	250	500	1000	2000	3150	4000	6300	8000
1	31	21	31	30	36	35	40	44	45
	32	25	32	26	35	34	32	41	41
	33	27	32	31	36	35	35	42	46
2	31	29	35	34	40	41	44	52	47
	32	31	35	35	42	45	44	51	46
	30	27	30	29	37	36	40	54	45
3	35	31	33	31	43	48	50	48	48
	30	28	32	31	42	48	51	48	47
	36	31	36	34	44	53	52	45	47
4	26	27	30	29	31	34	34	36	46
	26	24	28	29	34	33	32	37	46
	26	24	32	30	33	30	32	35	46
5	33	32	36	30	34	40	42	42	55
	40	33	38	31	37	44	46	46	51
	30	34	39	31	29	36	43	48	58
6	38	39	43	39	38	43	48	54	48
	40	38	41	38	33	43	47	48	47
	41	37	44	38	34	40	45	47	47
7	42	41	45	40	39	45	49	48	51
	41	40	44	39	40	45	49	49	51
	38	38	41	38	39	44	49	48	51
8	30	29	29	31	34	42	40	41	41
	22	25	26	28	33	38	39	41	40
	22	25	26	27	32	38	40	40	39
9	32	29	33	29	38	42	41	50	51
	30	28	34	28	38	41	40	48	52
	31	28	33	29	38	39	41	47	52
10	36	32	42	31	39	38	41	41	39
	33	31	38	33	42	38	41	41	4
	33	34	36	30	39	38	44	41	39

Assumed Protection Value									
<b>Mean</b>	32.7	30.6	35.1	31.9	37.0	40.2	42.4	45.0	46.8
<b>STD. DEV.</b>	5.3	5.3	5.6	3.9	3.7	5.1	5.7	5.1	4.9

**NRR= 25 dB**

*Use these laboratory-derived data for comparison purposes only. The amount of protection afforded in field use is often significantly lower depending on how the protectors are fitted and worn.*

**Measurements were made according to American National Standards Institute Specifications ANSI S3.19-1974.**

Center Frequency in Hz	Mean Attenuation in dB	Group Attenuation In dB	Standard Deviation In dB
<b>125</b>	32.7	63.2	5.3
<b>250</b>	30.6		5.3
<b>500</b>	35.1		5.6
<b>1000</b>	31.9		3.9
<b>2000</b>	37.0	186.6	3.7
<b>3150</b>	40.2		5.1
<b>4000</b>	42.4		5.7
<b>6300</b>	45.0	91.8	5.1
<b>8000</b>	46.8		4.9

*These data were obtained through measurements made at the laboratories of Michael & Associates, Inc., State College, PA , USA. Michael & Associates, Inc., is accredited to test to ANSI S3.19-1974, ANSI S12.6-2008 and AS/NZS 1270:2002 by the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).*

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