

Abrasive blasting may subject workers to noise exposures in excess of 120 decibels (dB) across many different transmitted frequencies.

OSHA Regulation 29 CFR 1910.95(c)(1) states that an employer must administer a continuing, effective hearing conservation program whenever employee noise exposures are at or above an eight hour time-weighted average of 85 dBA.

Typical ear muff hearing protective devices will not meet the attenuation requirements using Noise Reduction Rating (NRR) methods. NRR is a laboratory-derived numerical estimate of the damping or decrease of noise levels from wearing hearing protective devices. In addition, helmet style blasting respirators make it difficult in many cases for a worker to wear an ear muff due to space constraints inside the helmet. Further, plugs often do not have a high enough NRR to satisfy the attenuation requirements either. Another option for attenuation is the contributions from the helmet itself.

The attached report shows that the Bullard GenVX with cheek pads installed provides an attenuation of 8 dB*.

These data were obtained through measurements made at the laboratories of Michael and Associates, Inc., State College, PA, USA.

The values of sound attenuation used for calculation of the NRR of the GenVX helmet were determined in accordance with ANSI S3.19-1974, "American National Standard for the Measurement of Real-Ear Hearing Protector Attenuation and Physical Attenuation of Earmuffs."

The experimenter-fit method was used; that is, the experimenter (not the test subject) must fit the hearing protector onto the head or into the ear of each test subject for each occluded test. Mean attenuations and standard deviations were calculated in accordance with the standard. The NRR was then computed from the mean attenuations and standard deviations.

Some helmet manufacturers have also published their own noise attenuation studies, using slightly different methods of analysis, which show significantly higher levels of attenuation for their product. The tests conducted in some of these instances use head and torso simulators, rather than live human subjects. This allows the test results to be computed using what is often referred to as the "Long Method" attenuation. This method takes the Log Sum of the readings without accounting for any Standard Deviation, as the simulated subjects do not have the variables associated with human subjects.

When the GenVX results are adjusted to this method, the GenVX helmet shows noise attenuation of 30.7 dBA.

*This number may be higher, depending upon the frequency of the noise exposure in the blasting environment. Contact Bullard with your noise frequency for verification.

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Hearing Protective Device Test Report Number Q3043A Revision 0

Bullard
Attn: Holly Jo Johnson
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Date of Report: 10/2/13
Date of Sample Receipt: 9/17/13
Date of Sample test: 9/19/13-10/1/13

Lab code 100427



Attenuation measurements have been performed according to the American National Standards Institute (ANSI) Specifications, ANSI S3.19-1974, using the experimenter-fit protocol, on the Bullard GenVX sand-blasting helmet with earpads (test ID Q3043A). 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 S3.19-1974. The ambient noise levels in this room are below the limits specified in ANSI S3.19-1974, 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 S3.19-1974, ANSI S12.6-2008, AS/NZ S1270:2002 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 NIST.

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.

A handwritten signature in cursive script, appearing to read 'Kevin Michael', is written over a horizontal line.

Kevin Michael, Ph.D.
President

10/2/13

Date

**Individual and Summary Attenuation Data for
Hearing Protective Devices**

Test Method: ANSI S3.19-1974
 Manufacturer: Bullard
 Model: GenVX

Position: Helmet
 Date: 10/2/13
 Test ID # Q3043A

SUBJECT	FREQUENCY IN HERTZ								
	125	250	500	1000	2000	3150	4000	6300	8000
1	16	19	9	13	24	37	45	62	59
	13	20	14	12	27	37	46	62	61
	18	18	15	10	28	33	45	57	60
2	10	21	10	15	27	41	48	57	65
	12	16	8	12	22	38	48	58	64
	14	16	9	12	23	38	50	58	65
3	17	17	11	14	30	46	47	56	60
	17	17	7	19	31	39	56	62	62
	16	13	7	15	32	50	50	59	60
4	16	15	9	11	25	32	38	51	49
	13	8	7	10	19	29	39	44	44
	12	6	6	10	17	32	37	40	41
5	6	11	10	12	21	33	34	50	57
	12	9	12	19	26	35	30	56	57
	12	13	3	9	22	33	41	57	59
6	14	16	8	10	27	38	47	57	60
	24	18	13	20	26	44	46	61	62
	23	26	13	21	25	39	48	58	59
7	12	13	8	17	21	32	41	51	52
	17	19	17	18	19	35	42	48	49
	12	13	11	16	22	34	45	51	49
8	19	20	10	19	28	42	42	57	63
	18	20	12	19	30	39	44	60	62
	16	17	8	13	22	39	43	59	61
9	11	12	10	11	23	35	43	55	52
	8	9	7	12	22	32	43	52	58
	8	10	10	10	22	31	44	53	60
10	20	11	11	16	26	42	49	61	65
	21	16	11	17	27	41	49	62	68
	8	12	10	18	25	43	49	62	65
MEANS	14.4	15.0	9.8	14.2	24.6	37.3	44.2	55.9	58.3
STD. DEV.	4.5	4.5	2.9	3.7	3.6	5.0	5.2	5.5	6.7

NRR = 8 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.

Manufacturer: Bullard
Model: GenVX
Position: Helmet

Date: 10/2/13
Test ID: Q3043A

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

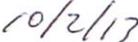
Center Frequency in Hz	Mean Attenuation in dB	Group Attenuation in dB	Standard Deviation in dB
125	14.4	29.4	4.5
250	15.0		4.5
500	9.8		2.9
1000	14.2		3.7
2000	24.6	130.1	3.6
3150	37.3		5.0
4000	44.2		5.2
6300	55.9	114.2	5.5
8000	58.3		6.7

Test Item: Q3043A



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, ANSI S12.42-2010, EN352 parts 1-8 and AS/NZ S1270:2002 by the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).


Kevin L. Michael, Ph.D.
President


Date