



**ACOUSTOLOGY 07/2004**

by Jeff D. Szymanski, Chief Engineer

This month: *TruTraps™*

At the 2004 Summer NAMM Show this month in Nashville, we introduced our *TruTraps Broadband Absorption System*. The *TruTraps* system includes flat-cut, 3” thick *Studiofoam®* panels, called *TruPanels™*, and our new *TruSpacers™*. For over 50 years, it has been common knowledge that an airspace behind a passive absorber increases its low frequency effectiveness. Over the last decade and a half, we have often instructed users on “DIY” techniques to fur out their *Studiofoam* panels and create their own airspaces to benefit from this natural increase.

Well, now it’s even easier! By using our *TruSpacers*, any customer can quickly and easily install spaced out panels on their walls for a “one-product-fits-all,” broadband acoustical solution. While several other manufacturers have their own versions of absorbers that incorporate airspaces, *TruTraps* offer a significant increase in versatility:

- *TruSpacers* can be used to space panels over a corner or over a flat wall or ceiling.
- *TruSpacers* can be combined to yield airspaces from 3” and up!
- The 3” *TruPanels* have been specifically designed to allow for placement of *Q’Fusors* on the flat surface. This provides you with a combination broadband absorber *and* diffusor.

The overwhelming reason to choose *TruTraps*? *TruTraps* average 4 times less in cost when broadband absorption is compared on a Cost/Sab basis. (Sab is the abbreviation for the unit of acoustical absorption – the *sabin*.) When only low frequency (below 250 Hz) performance is considered, *TruTraps* average 6 times less in cost, but are **as much as 20 times less expensive!** To get all the details on the components of the *TruTraps System*, visit the [TruTraps page](#).

***TruTrap™ Performance Cost Analyses***

The following analyses are based on data we researched on some competing products. This research turned up a very small handful of products since many absorbers are not tested with an airspace as *TruTraps* were. The products were chosen either because their respective manufacturer’s suggestions call for mounting with airspaces, or because the products include airspaces in the design.

**Figure 1** (next page) shows a Cost/Sab comparison at low frequencies for *TruTraps* and *MiniTraps*. A typical street price for a *TruTraps* system is \$1,199.00 and includes 120 ft<sup>2</sup> of coverage. A typical street price for a pair of *MiniTraps* is \$398.00 and includes 16 ft<sup>2</sup> of coverage. Both products were tested in similar configurations<sup>1</sup>, spread out evenly on the reverberation chamber floor, with an airspace behind the panels. (*TruTraps* airspace created with 3” *TruSpacers* and *MiniTraps* with the manufacturer’s recommended airspace.)

To arrive at the data illustrated in **Figure 1**, we took the cost of the system and divided it by the product of the absorption coefficient for each panel (as measured/reported) and the area of coverage in the system. In other words:

$$Cost / Sab = \frac{SystemCost}{(\alpha * SystemArea)}$$

where α is the absorption coefficient of each product which has the units Sab/ft<sup>2</sup>. So, for example, at 125 Hz, the *TruTrap* system has an absorption coefficient of 0.54875 and the system provides 120 ft<sup>2</sup> of coverage. Therefore, Cost/Sab is equal to:

$$Cost / Sab_{TruTrap @ 125Hz} = \frac{\$1,199.00}{(0.54875 Sab / ft^2 * 120.00 ft^2)} = \$18.21 / Sab$$

<sup>1</sup> Configurations which were *not* per the ASTM E795 mounting standard. For actual, official *TruTraps* performance data, please see our [Master Data Table](#).



Figure 1: Performance Cost Analysis for Low Frequencies

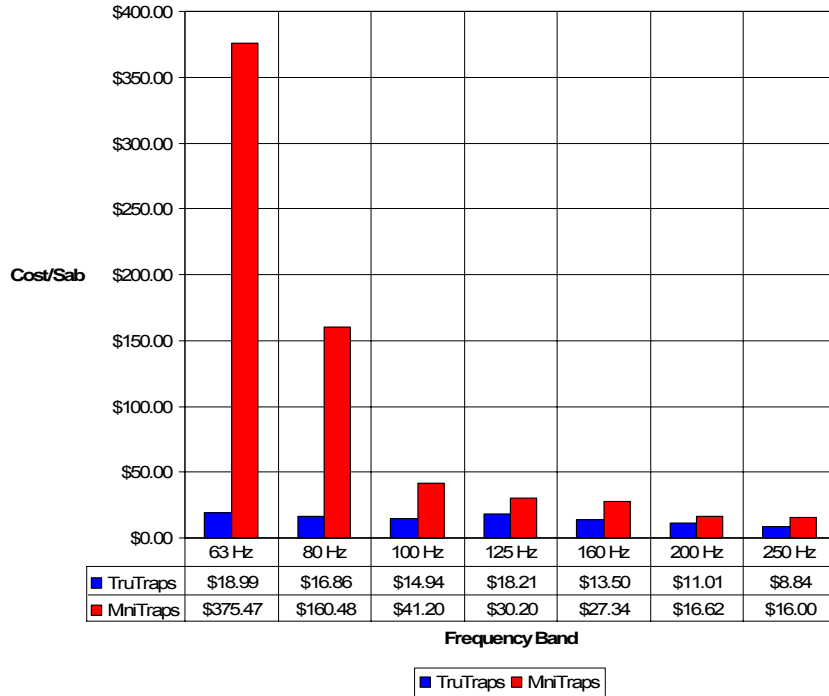
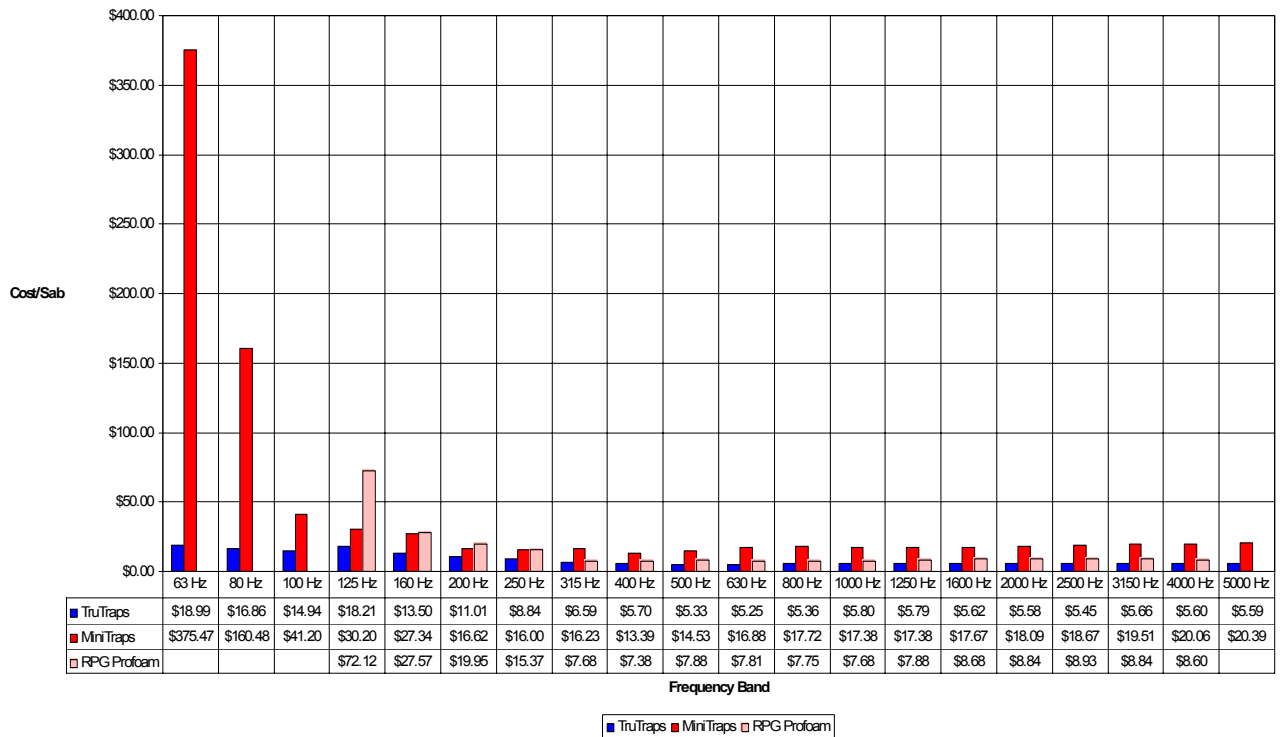


Figure 2 below shows a broadband comparison of three products. The same calculations as for Figure 1 apply.

Figure 2: Performance Cost Analysis for All Frequencies (Broadband)





And finally, to be completely fair, **Table 1** below shows the absorption coefficients that were used for the calculations in **Figures 1 and 2**. Note that for *TruTraps* and *MiniTraps*, the data were originally measured/reported as sabins/unit. An area of 8 ft<sup>2</sup> was chosen for each product to calculate absorption coefficients. While there is ample debate about what the “correct” area should be for a spaced panel, 8 ft<sup>2</sup> was used here for both products to maintain consistency of comparison.

**Table 1: Absorption coefficients for Figures 1 and 2**

<b>1/3-octave Band</b>	<b>TruTraps (3" panels, 3" airspace<sup>2</sup>)</b>	<b>MiniTraps (3.25" panel, 4" airspace)</b>	<b>RPG ProFoam, 2 layers (3" thick with airspaces per panel design)</b>
63 Hz	0.53	0.07	
80 Hz	0.59	0.16	
100 Hz	0.67	0.60	
125 Hz	0.55	0.82	0.13
160 Hz	0.74	0.91	0.34
200 Hz	0.91	1.50	0.47
250 Hz	1.13	1.56	0.61
315 Hz	1.52	1.53	1.22
400 Hz	1.75	1.86	1.27
500 Hz	1.88	1.71	1.19
630 Hz	1.90	1.47	1.20
800 Hz	1.86	1.40	1.21
1000 Hz	1.72	1.43	1.22
1250 Hz	1.73	1.43	1.19
1600 Hz	1.78	1.41	1.08
2000 Hz	1.79	1.38	1.06
2500 Hz	1.83	1.33	1.05
3150 Hz	1.77	1.28	1.06
4000 Hz	1.78	1.24	1.09
5000 Hz	1.79	1.22	

Next Month: *Acoustics 101.com*—revised at last!!!

<sup>2</sup> Note that these figures will not match the official test data on *TruTraps* due to the aforementioned non-standard mounting configuration employed for this comparison test.