



# Metal Detectors

**If it's transparent  
loudspeakers you crave,  
David Price implores  
you to seek out  
Usher's new Be-10!**

**M**uch to my *chagrin*, the only science I wasn't terribly good at was Physics - not a great admission for an electronics obsessed, internal combustion engine-fascinated fifteen year old. But then, a curious ability at Chemistry kind of made up for it. I'd never been particularly excited at the prospect of test tubes, Bunsen burners and fume cupboards (although the occasional opportunity to add water to acid was never missed), but somehow almost by accident, I took to it like a duck to water...

One of the reasons was learning about the Periodic Table. "Wow," I mused, "here's everything you need to know, all the chemical building

blocks mapped out in front of you - learn that and I've cracked it". Thus began my slavish, by rote, chanting of "H-He-Li-Be-B-C-N-O-F-Ne-Na-Mg-Al-Si-P-S-Cl-Ar-K-Ca". Although it wasn't quite as easy as "Every Good Boy Deserves Football" for my Music 'O Level', the mnemonic eventually sunk in and lo and behold, Chemistry GCE was a pushover!

Well, a decade or so (ahem!) later, my increasingly porous grey matter has retained little of my school science exploits, but one thing it does remember is the Periodic Table, and my interest in materials technology remains. That's why I'm still fascinated at the way loudspeaker designs choose different substances to make drive units - from plastic film membranes for electrostatics to slivers of metal for ribbons, or any number of variations of doped paper and plastic with conventional moving coil cone drivers. The fun thing is that there are no rules - aside from that the thing or bit that moves the air should be as light and rigid and unresonant as possible...

Oh, and I forgot the final dictate - with commercially available speakers at least - cost. Let's not forget that there's got to be a point in making them in the first place (i.e. the company's continued existence), so financial considerations hold sway. That's why most speakers use moving coil drivers (they're the cheapest and/or the easiest to source or make), and also why most moving coil drivers use plastic cones of one type or another. Again, the same sort of thing you make Coke bottles out of or dispense Shampoo from is never going to break the bank now, is it?

Still - before we get too 'knowing' and cynical about why the commercial reality of production loudspeakers is generally so far away from the theoretical ideal - let's not forget that this is only half the story. Just because you've got the best drive unit material doesn't guarantee you will have the best sound - you need to integrate those drivers with the cabinet and other drivers successfully before you even come close. However, what you can be sure about is that if you haven't got the best driver materials, you'll never be able to get the best sound.

And so to the Usher Be-10 - which makes a very earnest attempt to achieve the state of the loudspeaker art by using not polypropylene or paper, but Beryllium for its treble and midrange units. My 'O Level' Chemistry textbook reminds me that this is the lightest stable metal on the planet, and only the fourth heaviest element in existence.

The prospect of using Hydrogen or Helium to make your speaker cones is - shall we say - 'airy fairy', and I wouldn't want to sit too close to a Lithium tweeter unless it was sitting in a bath of oil - to prevent it spontaneously combusting like a Spinal Tap drummer! In short then, 'Be' is ultra light yet stable, and as such ideal for use in a transducer. Because of its

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very nature, it is far better suited to the job of moving air than anything made from heavy old Magnesium or Aluminium. Well, Beryllium *would* be ideal, were it not for the fact that it's so expensive to produce safely - for consumer loudspeaker applications, the price certainly isn't right.

This explains why so few speakers have ever employed this material - with the standout exception being Yamaha's NS1000M which I use to this day. Sure, they have their weaknesses, but the speed, clarity and insight is like no other I've heard. The Yamahas' strength comes not from using a Beryllium tweeter, but from mating one to a five inch Beryllium midrange dome so well. With this speaker, you have all the most audible frequencies handled by phase-coherent, identical sounding transducers, and the results are startling. Well, to this select group you can now add the Usher Be-10s - for they too run Beryllium tweeters and midrange units, although with the Be-10 Usher have chosen to invert the midrange dome to a cone profile. This, says the company, is the first ever such driver.

£10,500 buys you a very big (365x715x1215mm) box weighing no less than 92kg (including its base). The Be-10 is, like so many of my favourite loudspeakers, a big three way running a 1.25" Beryllium tweeter from 40kHz down to 3.46kHz, after which that 5" inverted Beryllium dome takes over. This goes down to 550Hz, when an 11" Eton woofer handles everything right down to 25Hz (claimed) with the help of bass reflex loading. One problem for the bass unit to contend with, with two of the world's fastest, lightest drivers pulsing away above it, is how to keep up. For this reason, Usher have chosen Kevlar - which is another light and stiff material (a patented para-aramid synthetic fibre) - famous for being used in bulletproof jackets, amongst other things, due to

it being five times stronger than steel on a weight-for-weight basis. The cabinet is a familiar profile for Usher, being rounded at the back (to reduce resonances) and angled backwards (to provide time-alignment). Needless to say it is massively braced and the standard of finish is - as you'd expect from high end Ushers - immaculate.

## SOUND QUALITY

Costing over £10,000 I am afraid you cannot make excuses for a loudspeaker such as this - it's right up against the likes of B&W's 801D and thus playing with the big boys. With this in mind, I wasn't expecting to be able to be 'nice' to the Usher Be-10s. Of course, I knew that they had a great start in life with their state-of-the-art treble and mid units, but in my experience theoretical excellence rarely translates into practical perfection. Being the hardened old hack that I am, I was ready to find fault, but it turned out to be more difficult than I had first thought.

Within the opening notes of the first bar of a cleanly recorded piece of music, played through decent amplification, you can tell just how different these boxes are to almost every other. There is exceptional clarity from top to bottom, but it's not the usual sort of dry, sterile focus than so many so-called 'reference' loudspeakers serve up. Instead, this is natural and effortless. Rather than shining a thousand Watt bulb on the recording and clicking in the zoom lens, the Ushers provide a wide angle window on what's going on without



preoccupying themselves (or you) on individual detail points. Or so it seems, because actually, they also brilliantly resolve every detail of the song, but just don't draw attention to themselves as they do it. The result is a simple, natural, matter of fact sound unsullied by mediocre transducers.

This is impressive stuff, but the Ushers don't sound impressive - it's not like they're trying hard to push out everything at you. It's all there for sure, but surprisingly you can take it or leave it as you please - which is one area where they are conspicuously ahead of my reference Yamahas. The combination of enormous detail and delicacy allied to real ease is what defines these loudspeakers as truly great, and it's all down to the integration between all three drive units. Just having a trick tweeter isn't enough. It's the seamless combination of HF and midband units with very similar phase characteristics and tonal character (however unobtrusive this may be anyway) that makes for such an open, lucid and yet so subtle sound. Whilst other Usher speakers have had Beryllium tweeters, to me this almost creates more problems than it solves, because it's impossible to completely harmoniously marry them to a midrange unit that's not made of the same super-light material. The end result hasn't been bad, but still at times seems less than the sum of the parts. Here though, it is the opposite - the two Be drivers give seamless clarity that puts most electrostatics to shame, and then go on to marry up with that big Kevlar bass unit blissfully.

Kraftwerk's 'Tour De France Étape 1' is a case in point. This is a sparse recording with tremendous rhythmic subtlety and layer upon layer of detail. I can honestly say I've never heard Ralf Hutter's deadpan vocoded vocals as clearly as I have with the Be-10s - these speakers communicated the air around his voice with utter ease, remaining unflapped by that pounding bassline and cascading keyboards running very close to 0dB levels. Despite the breathtaking forensic analysis of the elements within the mix, this didn't distract one jot from the song's hypnotic rhythm and imposing physical weight, which the Ushers caught brilliantly. The result was an engrossing rendition of a track which I (and many other Kraftwerk fans, I suspect) feel gets better every time you listen to it. Even at very high levels, these speakers never veered towards harshness, which is normally the price you pay for such resolution - even on the opening four bars of

the following 'Tour De France Étape 2' with its highly modulated keyboard pads, which are forward enough to make projectiles out of lesser midrange drivers!

Likewise, cue up Saxon's '747: Strangers in the Night' and the Be-10s cut right through the mix, conveying Barnsley's finest with sparkling clarity and freshness that makes the music sound like it was



recorded last week, rather than three decades ago. It's great to hear an instant switch from one studio to another, the speakers telling me everything about the new recording yet never letting this distract - or detract - from the musical performance. The band's epic drum sound, cowering basslines and falsetto guitars are there in all their (rather camp) finery, along with the distinctive strains of Biff Byford's gruff vocals. I loved the way that, whereas with Kraftwerk the recording had been up close and personal, suddenly Saxon were hanging back, with some aspects of the mix dropping almost behind the rear wall, with everything in incredible focus all the same.

REM's 'Maps and Legends' showed a blissful mix of tonal accuracy, rhythmic alacrity and dizzying detailing. This is a fairly muddy sounding track, appropriately enough recorded during a trip to rainy London in winter 1985, and lacks the glossy sheen of their later (I would say) cruder pop-rock excursions. The Be-10s cut through the grunge like a hot knife

through butter, once again 'snapping' a completely different recorded acoustic into the listening room as soon as the laser hit the silver disc pits. Where there is usually a muddle of murky guitars doing a pale Byrds pastiche, now I could hear crisply played, deftly strummed, multitracked, layered Rickenbackers chiming "like bells in the night" (as Be Bop Deluxe's Bill Nelson once so nicely put it). Singer Michael Stipe's plaintive tones gained a degree of warmth and subtlety compared to the likes of B&W's 801D, those Beryllium midrange units apparently editorialising an awful lot less about its sound...

Jamiroquai's 'Return of The Space Cowboy' showcased the song's beautifully smooth and laid back electric piano work, the speakers giving it a tremendously tactile quality that's so often missed. This is a band that can sound very bland on record, but I've found them quite captivating live, and again the Ushers nailed it. The quality of this early nineties analogue recording showed the excellence of the Usher tweeters; they're blessed with uncanny clarity, delicacy and air - making your average aluminium affair sound like two dustbin lids being bashed together by a twelve year old with an ASBO. The great integration with the midrange unit meant the Be-10s had brilliant phase performance; backing vocals hung well back yet were solid in their location all the same, contrasting well with singer Jay Kay's imposing lead.

This track also has a big, deep, sumptuous bass guitar pushing it along - and even a bass solo half way through. I found the Be-10 to be very strong in this respect too - powerful, taut, firm and insistent yet never overbearing, the balance was beautifully judged. They also went very loud without showing any strain, giving something very close to a 'live PA' sound at high levels. Indeed, my only gripe - and it is minor - is that the Be-10s just lacked



that requisite pin-sharpness in the bass. Although I heard negligible box boom from the big cabinets in my small-to-medium sized listening room, it was obvious that these are reflex port-loaded loudspeakers, lacking as they do the instantaneous LED-like 'on-off' of my reference Yamahas (which are non-ported, infinite baffle designs). This very subtle time slurring in the bass (and in the Be-10 is it very subtle, I must add) is I am afraid, a fact of life for ported boxes in my experience. Realising that there are many who believe otherwise, I shall brace myself for the complaints, but having chosen to live with infinite baffle speakers all my life, I can sniff this out like milk past its sell by date in my morning coffee!

confined spaces than other 'big' speakers such as B&W 801s. Music choice? Well - the Ushers loved everything I tried, being seemingly one of the best all rounders in the business. Overall, as you might have guessed, I think these are one of the best pairs of loudspeakers I've heard - up there with the finest electrostatics and multi-ribbon designs around. They showcase the best in contemporary (and classic) loudspeaker design and, just as importantly, make it work like few others.

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REFERENCE SYSTEM

- Naim CD3 CD player
- NuForce P9 preamplifier
- NuForce Reference 9SE power amplifiers

CONCLUSION

It is amazing how many high end speakers are so obviously flawed. Glorious flaws they may be; indeed some people even buy them because of these 'quirks'; but imperfections they remain. The thing about the Usher Be-10s is that - to my ears at least - they are mostly flawless. They are exceptionally open and expansive, whilst being uncoloured to a degree than makes your average electrostatic sound like a pair of disco speakers. After a protracted run-in and a thirty minute warm up every day they work brilliantly with all sorts of music, always drawing one's attention to the innate goodness of the recording rather than its faults. They're superb at capturing the essence of recording, as well as giving you chapter and verse about the fine detail. They're generally dizzyingly fast and dynamic, yet never need be used solely for these purposes - you can kick back with some late night classic jazz and relax without being assaulted.

Realistically, you need a serious system for the Usher Be-10s; the review system I used was the minimum you'd be countenancing. Think also about a medium to large room, not a small one - although they're better in

MEASURED PERFORMANCE

Usher are strong on measurement and producing a loudspeaker that is accurate, rather than enhanced. So the measured frequency response of the Be-10 comes as no surprise: it stays close to the 0dB datum from 60Hz all the way up to 18kHz, an unusually wide frequency range as loudspeakers go, and one that stays almost studiously close to notional perfection (in one sense). There's no treble lift wherever the measuring microphone is placed so the Be-10 isn't tweaked for the showroom and will sound less bright than most rivals, which these days have emphasised treble. However, a steady state pink noise analysis did show that in a room, modal build up of bass energy causes the Be-10 to peak at 75Hz and deliver enormous energy down to 50Hz, below which the port (red trace) kicks in to extend output down to 20Hz, our analysis shows. Since port output measures +8dB above forward driver output at 40Hz it contributes strongly. The Dancer Be-10 excited our room's main mode at 24Hz strongly, so it will have earthquake bass in large rooms.

The 5in (127mm) inverted Beryllium dome midrange and 1in (25mm) Beryllium dome tweeter together contributed to an unusually clean 200mS decay spectrum, ranking as one of the best loudspeakers we have measured to date and approaching that of the Kingsound Prince II electrostatic. So expect very low colouration and superb levels of clarity.

Sensitivity measured 89dB, as claimed, and impedance worked out at 6.3 Ohms overall, identical to the D.C.R. of 6.3 Ohms. The port is tuned very low, to 24Hz, and the impedance curve shows it exerts wide damping,

correlating to its wideband output. Bass notes from 40Hz upward will play cleanly over a non-resonant region of operation and should sound firm and even as a result. Above 60Hz to Be-10 load is 4 Ohms, and largely resistive, so it's a relatively easy load that should suit both valve and solid-state amplifiers, high sensitivity suggesting 20-60 Watts is all that will be needed in most circumstances.

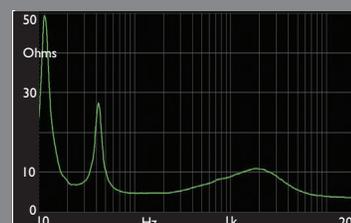
The Be-10 is classically well engineered, giving a superb measured performance in every area. It will need little power, match all amplifiers, is totally accurate, will have monumental bass and approach electrostatic levels of clarity and low colouration, measurement suggests. NK

FREQUENCY RESPONSE



Green - driver output  
Red - port output

IMPEDANCE



VERDICT

Brilliantly engineered loudspeakers with leading edge technology, honed to deliver breathtakingly clean, open and musical sound.

USHER BE-10 £10,500

HiAudio Distribution

+44 (0)845 052 52 59

www.hiaudio.co.uk

FOR

- seamless clarity across a wide frequency range
- arrestingly powerful bass
- exceptional tonal neutrality
- overall finesse

AGAINST

- fractionally slower bass
- require long run in & careful room and system matching