

There are two primary kinds of foam - conventional and high resilience (HR). Conventional foams have densities that range from 1.0 lbs per cubic foot to 2.25 lb/ft<sup>3</sup> and HR foam ranges from 2.0 lb/ft<sup>3</sup> to 4.0 lb/ft<sup>3</sup>. The density of a foam (a weight for a given volume) is not a measure of firmness, but rather a measure of support. By adjusting the blowing agents (CFCs, and now, methylene chloride) different levels of firmness can be created for the same density of foam. Nevertheless, density and firmness do tend to parallel one another, and so typically, HR foams have been chosen for support, while conventional foams were chosen for comfort. Ultracel beats both at each other's game.

## Support

Indentation Forced Deflection (IFD) is a measure of how much weight is necessary to compress a given piece of foam by a given amount. In fact, there are two measures taken, one is what does it take to compress the foam 65% (inner support) and the second by 25% (surface firmness). The ratio of the two measures is the most telling. Conventional and HR foams tend to have increasing support factors (the ratio) as density increases - conventional rises from about 1.95 to 2.15, while HR typically starts at 2.3 and rises to about 2.5. Ultracel foam consistently provides a support factor of 2.6 across the board, regardless of density!

## Comfort

2.6, not coincidentally, is equal to a comfort rating of 100%. As well, Ultracel performs better than conventional foams in resilience tests. In this test, a steel ball is dropped on a piece of foam from a given height and resilience is expressed as the percentage of the original height that is reached on the first bounce. The "spring" or "bounce back" is what people associate with comfort and Ultracel is 25% more resilient than conventional foam at a 1.8 lb/ft<sup>3</sup> density - this is the foam that White Lotus has chosen to use in its foam core futons.

In a variety of other tests, for example dynamic fatigue by roller shear and 90% compression set, Ultracel continues to outperform both conventional and HR foams. The result is a better foam that is

typically only used by the very high end furniture and bedding makers and never by futon crafters - except White Lotus.

White Lotus Futon makes only one kind of foam core futon and we use a 2 inch thick, solid slab of 1.8 lb/ft<sup>3</sup>, 34 lb IFD Ultracel technology foam to craft it. Ask about the foam at another futon store and ask to see a cross section of a futon that uses foam. Depending on the information the salesperson has available, you may be very surprised.

Many futon stores selling machine made futons will have a variety of futons at increasing levels of prices - the good, better, best system of marketing. Typically, the simplest futon mattress with foam will have a 1.0 or 1.2 lb/ft<sup>3</sup> density. In our opinion, this is simply not enough density to provide support. This mattress can be sold at a very low price to give the illusion of affordability for the "starting at" price of a futon couch. It would be an inadequate mattress for sleeping and an inferior couch for sitting. In all likelihood, the salesperson would agree ... and suggest that you consider one of their "better" mattresses. (This technique is sometimes called "bait and switch".) White Lotus simply would never offer for sale such a mattress (nor use such a sales technique.)

The "better" futon mattresses may then have foams of increasing density. Rarely, though, would anything but "the best" have a 1.8 density. Even among the 1.8s we have seen in other stores, the IFD (if the salesperson knows) is more likely to be in the low to mid 20s. It is now not unusual to see five or six "levels of quality" in a futon store, each one more expensive than the one before it, with something "new and improved" making it a worthwhile step up. At this point, what started out as a \$100 mattress is now \$350! A note of caution for the "better" or "best" mattresses - thickness achieved through hype:

Here in the United States, 'bigger is always better', so the good, better, best gimmick usually includes going from a "6-inch" to an "8-inch" to a "10-inch" futon. A key way to achieve this height is by using "finger foam". The cross section of finger foam will show its peaks and valleys. (In contrast to a solid slab, as White Lotus uses.) Yes, it is true - finger foam will add inches to your mattress. The

problem is, it will add nothing to the usefulness of your mattress. The peaks provide almost no support of any kind (IFDs are typically below 10, and some even below 5). The mattress is just taller. And for that, you have the privilege of paying more.

Let us make this simple - regardless of the foam used, and ignoring deceptive measurements, a mattress thinner (read - less substance) than White Lotus makes, is in our opinion too thin and will not provide a good night's sleep or proper support. A mattress thicker (read - genuinely more substance) will not fold into a couch. Period. Of course, if a customer really wants a thicker mattress from us and intends to use it on a flat bed (and thus, not fold it) we will always be happy to make it as thick as they like. But we also tell them that it is unnecessary and they are only wasting their money. After a certain thickness, the princess just isn't going to feel that pea, so why keep piling?

Assuming the quality issue has been thoroughly addressed, what about the Earth and inhabitants? For years, foams, conventional and HR, have been created with blowing agents, usually chloroflourocarbons (CFCs) and methylene chloride. CFCs have been recognized as destroying the ozone and are being phased out, but methylene chloride is no better and it is finally being recognized as the element of foam most responsible for offgassing. (Offgassing is the process whereby a chemical compound or a chemically treated material slowly releases its components into the atmosphere. The offgassing of many household products have been tied to headaches, nausea and even miscarriage, and the offgassing of children's spring mattresses is the most likely culprit for SIDS. Ultracel uses no CFCs and no methylene chloride - the foam is created through a process that uses water and uses no blowing agents at all. Here, we repeat - White Lotus Futon is the only futon maker that uses Ultracel.

Is a foam core futon from White Lotus a completely natural product? No. Is it the lesser of evils by great leaps and bounds? Yes. For completely natural sleeping, we recommend our handmade all-cotton futon. If you are going to purchase a bifold futon couch (and therefore an all-cotton just won't look right) our foam core futon is the most supportive and the most environmental choice. And we are proud of it.