RESTED

SLEEP ENGINEERING

Talalay Latex
The Ultimate Sleep Material

Rested_Talalay_Latex

Sleep Engineering is a technical discipline.

The results of which are shown in the feel and performance of our products.

Maybe nothing else should matter?

Yet knowledge is key and forms an important part of consumer choice. If you are investing in a product you should at least be offered the opportunity to understand it, and know what you are paying for.

This is our guide to Talalay Latex, for those that wish to understand this amazing product and take the first step in determining whether it is the right product for you. We hope it is helpful, and if not, maybe this little guide itself will send you to sleep!

At Rested, from a technical perspective only, we believe Talalay Latex to be the best sleep surface material available. Which is why it is included in the majority of the mattresses within our showcase, and why it is the material of choice for those manufacturers looking to engineer mattresses of the highest quality and performance.

Talalay Latex is rare. There are only two producers in the world. The reason for its rarity is that its production is technical, difficult, and expensive. From a global sleep industry perspective, there are cheaper foams and other latex's that can replace it for lesser cost and therefore produce lower cost mattresses, greater customer volumes, and better margins for mattress makers. On the economic terms of production, it has therefore not found popularity with manufacturers, is rarely available to consumers, and has not been embraced by the mainstream (including a distinct lack of awareness as to its benefits).

At Rested where we seek to provide the best products in the world, it was a simple choice to insist upon Talalay Latex. We saught out those manufacturers who have a history in its use, understand it, and believe in it as much as we do.

Dunlop Latex was created as a process in 1929. The Talalay Latex process (by Joseph Talalay) was not created until 1935 and took much longer to establish its production process. Both process are fundamentally similar and use largely the same ingredients, but it is in the technical transformation of the latex liquid into its solid form, that they differ. Dunlop Latex typically uses a five stage production process, whereas Talalay uses nine stages.

To explain the difference, we start at the beginning (and forgive us for trying to keep it as simple as possible!)

Natural latex is harvested from the rubber tree, Havea Brasiliensis, which are grown in tropical climate plantations around the world, including South-East Asia, parts of Africa and South America. The trees are not harmed and therefore provide a sustainable and renewable resource.

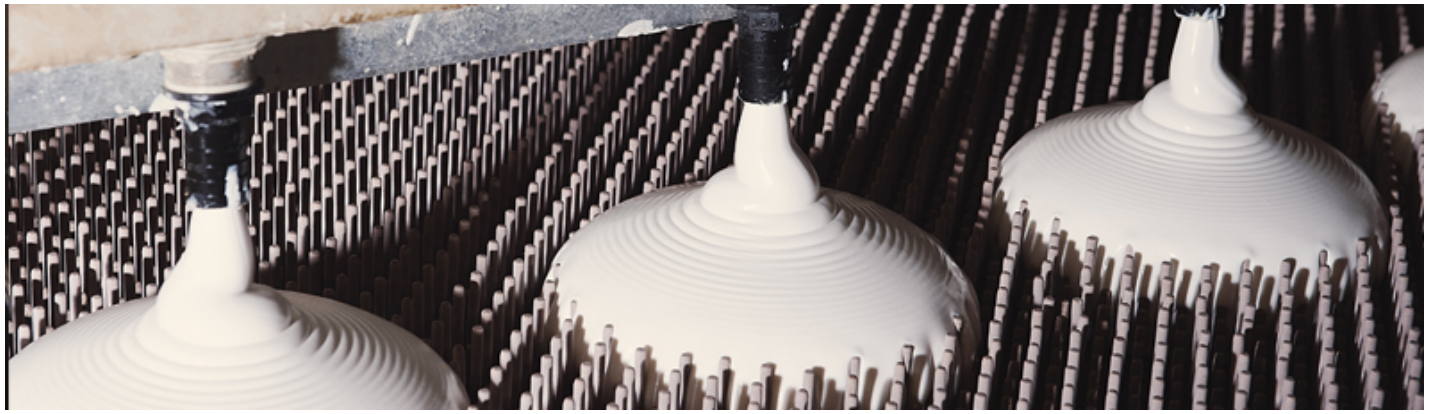
The basic Dunlop process is as follows: Rubber tree sap is mixed with water, natural soaps, sulphur, ammonia, gelling and vulcanization agents.

Compressed air is then added whilst it is mixed, turning it into a foamy liquid (shown below). That liquid is poured into a mattress shaped mould (which it completely fills), and then 'vulcanised' (heated at very high temperature), which solidifies the liquid into the latex that we know.

The Talalay process differs in the detail and by the addition of stages that fundamentally increase the amount of air in the structure.

The differences are best described by comparison to the Dunlop process. In the Dunlop process, the mattress mould is completely filled with the latex liquid. In the Talalay process, the mould is only filled to 30% - 60% with the liquid.

The Talalay mould is then completely sealed and a vacuum generated. That vacuum causes the liquid to ‘rise’ to fill the mould. Air pressure expands the air bubbles in the liquid to completely fill the mould with a totally uniform open cell ‘air bubble’ structure. Immediately after it has fully expanded in the vaccum, the liquid is then flash frozen within the mould. By freezing it, the structure is completely retained as are the open ‘linkages’ between the cells and the air bubbles. The latex particles can not collapse, settle or move to the bottom of the mould as is the case in the Dunlop process. Then the mould is vulcanized in a similar way to Dunlop, only with greater time and detail attributed to the later phases of vulcanisation. Talalay spends longer being 'baked' and processed, which increases the longevity and properties of the product.
Thus, the difference is more air in Talalay, and therefore more elasticity, since each air bubble acts like a bouncy little spring. The entire piece of Talalay has a totally uniform open cell structure created by the additional steps of vacuuming the mould and then freezing it.

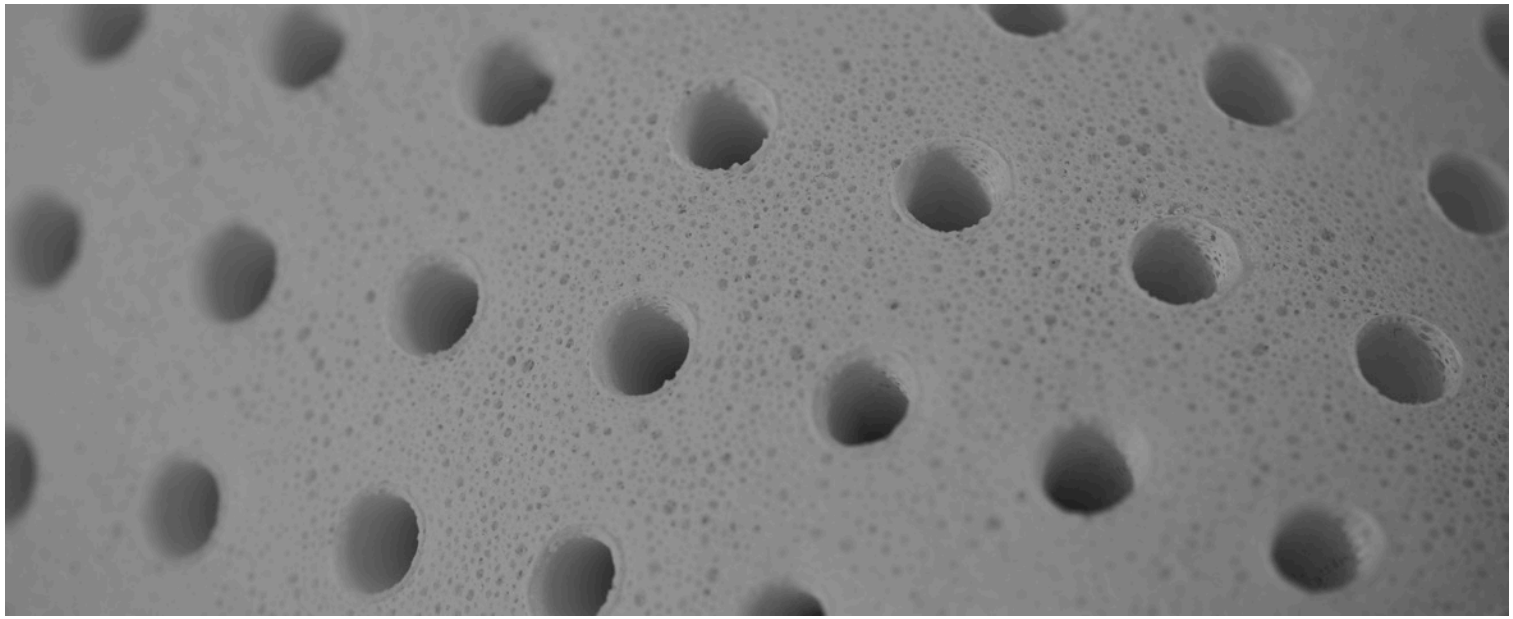


After the entire process, the latex is demoulded, and washed. The washing (and drying) process itself is important and complex. It gives the latex its durability, and begins its life as a mattress component in a clean and hygienic manner.

What is so special about Talalay latex, and why are these differences worthwhile?

It is important to recognise what we mean by 'open' cell. It means that the Talalay latex is permeable. Air, and moisture can pass through it. Obviously a significant part of the mattress is air, but the remaining part, the physical element, is by virtue of the Talalay process all 'linked' in open manner. Continuous open chains of joined cells. This property dramatically changes the performance of the Latex.

We can now focus on the benefits of the science and the material.



Comfort:

Talalay latex is like having millions of tiny springs comforting and supporting you. The traditional mattress industry has always been obsessed with pocket springs. 1000/2000/3000/Barrels/Double Layers/Honeycombs. What Talalay Latex represents are infiinitely more numerous springs on a microscopic level. Due to the size, they have the highest possible, 'spot elacticity' - meaning that they react only to the area where pressure is applied. Imagine therefore, that in relation to your shoulders and hips that exert the most pressure on your mattress, the Talalay can completely conform to the exact pressure points.

At the same time as relieving pressure, the Talalay structure does not become 'compressed'. In other words it has upwards lift, and therefore provides support. So as a material, it provides both cushioning and support at the same time.

To understand this further, a visco elastic (memory foam) is excellent at cushioning. As it happens, it was Nasa that first commissioned the development of visco elastic foams when they were looking for a solution to absorb pressure from the seats of Astronauts during take-off. Talalay latex would have been completely inappropriate as whilst it has fantastic pressure reduction, it is also springy and bouncy. Visco elastic foam when used in a mattress can provide fantastic pressure relief and a real feeling of comfort, which many people appreciate, but it is fundamentally different to the feel of Talalay Latex. Visco Elastic foam becomes compressed by pressure (and heat), whereas Talalay latex acts like a spring to push back and stay 'open'.

Talalay therefore provides fantastic comfort and support when used within mattresses. It is best used where pressure is directly applied i.e in the top layer of the mattress where its benefit of spot elasticity, cushioning, and lift can be felt. Typically therefore it used as a comfort layer in varying thicknesses, and the overall feel of the mattress can then be adapted by the layers that come beneath. In practice a comfort layer needs to be at least 5cm in depth, preferably more.

Due to the expense of Talalay, the depth of its utilisation will be a major factor for the price of the mattress. It is possible to sleep comfortably on 100% Talalay, (i.e a single piece mattress with no other components), but in practise (and certainly through our own testing) this tends to lack the deeper underlying firm support that our backs need for support and spinal alignment. Too much Talalay and the entire mattress becomes either too bouncy, or depending on weight, too conforming to provide the required element of support. This is why for example, Dunlop process latex is widely utilised in single piece mattresses, because it is not homogenous. Dunlop latex is firmer at the base because the rubber particles settle at the bottom. In addition, Dunlop process latex does not have the air filled structure that Talalay has, and is therefore firmer overall than Talalay.

When it comes to using Talalay latex there is therefore an 'art' involved. To combine the amazing comfort properties of Talalay in the right depth, and with other materials to create mattresses that allow the user to experience the joy of Talalay combined with base layer support. It is this skill that only selected manufacturers can deliver through Research and Development.

The 'Art' of Talalay also comes about through its manufacture. We stated that the Talalay mould is filled between 30-50% with the liquid mixture, and it is in that percentage range, that differing comfort feels can be created. More liquid, less expansion by air, differing firmness. It is another reason why we like to work with Talalay, because it allows the creation of differing feels for different people, and in many cases we do so in the same mattress by differing the sides of the mattress either vertically or laterally.

Breathability:

The comfort element is only part of the consideration though. It is principle reason a good Talalay mattress, skillfully combined by a knowledgeable manufacturer will feel exceptional, but that is not the only reason why from a Sleep Engineering perspective it is such a valuable material.

The open cell structure, airflow, and breathability of Talalay is enormously enhanced, beyond both other types of latex, and indeed other foams, including visco-elastics. In a mattress, we want air to flow, in order to keep our mattress fresh, but more importantly because air flow is the natural means for temperature regulation to occur. Not all visco-foams are equal, but certainly when compared to standard visco-foams, Talalay can be up to 20 times more breathable.

The increased airflow allows heat and moisture to be directed away from the body, thereby keeping you cooler, and drier throughout the night. Heat and moisture production are reduced, and if they are produced, they are moved through the product and rapidly dissipated in all directions, away from your body. To take full advantage of this permeability of both air and moisture, it is important to combine Talalay with ventilated outer covers (ticking), that match the breathability of the Talalay therein.

Hygiene:

The average person releases between 250ml and 500ml of moisture every night. The range being on account of size, core temperature and natural differences in the amount that people sweat. However you look at it, that's a full bottle of water, every night, emptied into your mattress. Consider therefore the implications for a mattress used by a consumer for ten years!

This is why breathability, ventilation, and what happens to moisture in the night are absolutely critical to mattress design.

To consider a budget pocket sprung mattress, the moisture and your skin cells enters the sprung area, form their own pleasantly warm and humid microclimate, and save for a few cursory 'pin hole' vents in the side (if at all), that is where it shall remain.

To then consider the perfect environment for both dust mites, bed bugs, and fungal growth which attracts and sustains them, we have just created it! A humid, stagnant, moist and warm micro climate, within a mattress.

Thus from a hygiene perspective, the structure of your mattress is very important, as it directly correlates to breathability, ventilation and therefore hygiene.

It is easy for us to simply state, Talalay is hypo-allergenic, anti dust mite, anti microbial. It is more difficult to understand why that is the case, but the basis is in the open cell structure, enhanced breathability, permeability of air and moisture, and of course that it is a solid structure rather than pocket springs. Hypo-allergenic is the right term to use, in that Talalay is less likely than other foams or mattress constructions to contain and harbour allergens, and its structure is naturally prohibitive to the growth of fungals and the existence of mites.

The process of creating the latex, with extreme temperatures to vulcanise it, and complex washing thereafter, mean that Talalay starts its life in hygienic fashion, free from allergens, and as a structure it is best placed to maintain that for the duration of its life. It is therefore an excellent choice for those who are sensitive to allergens and are looking for the most hygienic mattress they can find.

Durability:

It is well known that Latex mattresses have great longevity. A fact proven by example since the creation of both Dunlop and Talalay in the early 1900's.

Consumers should find that Talalay latex manufacturers offer exceptionally long warranties (longer than pocket springs or other foams) in support of that fact. They wouldn't be doing so if they thought they would be coming back!

Fundamentally, the open cell structure of Talalay Latex is enormously resilient. The vulcanisation, and complex processes of 'off-baking' and washing the latex create a structure that is on a microscopic level, exceptionally robust and will retain its shape and structure under normal mattress use for at least 5 - 10 years, and more than likely for longer.

When you purchase a Talalay mattress you are investing in all of the major benefits of comfort, support, breathability, temperature regulation, and hygiene, but you are also buying a product that is built to last, and proven so. Never again, shall you hear the excruciating sound of a spring breaking!

Conclusion:

Talalay Latex is a remarkable material, with remarkable properties.

But let’s not get hung up on the technical. You understand it now, and the real proof is in the experience.

In truth there is no single material that is right for everybody, so we won't tell you that it is. We all have our own definitions and physical sensations of what comfort is. For functional performance, it doesn't really get any better than Talalay in our opinion, so if it does match your comfort profile it is highly recommended.

There is only one thing for it. Time to try it.

A note on Latex allergy:

Many people are aware of latex allergies. It is a rare condition, but clearly does occur. It is most likely to occur where latex is put in direct contact with the skin, i.e gloves. It is also most likely to occur with virgin form latex products such as medical items (medical gloves) which have not been vulcanised through the extreme heat that Talalay is processed through. In practise, both the producer of Talalay and the mattress manufacturers that we are use, are both able to state that they have not encountered latex allergy arising from Talalay inclusion in mattresses. That therefore does not mean it can not and will not happen, but certainly both the process and the facts indicate that it is extremely unlikely. Latex Allergy arising from Talalay Latex inclusion in mattresses has been tracked in the US, and there has never been a publicly reported case.

A note on 'Naturalness':

Talalay latex has at its heart a natural process and a natural material. The collected 'milk' of the rubber trees. The extent to which that is mixed with other materials will determine statements governing the 'naturalness' of the product. In practice, Talalay Latex is not produced for the UK in 100% natural form. This is because current flammability regulation in the UK provides that any latex foam must meet stringent tests relating to its performance and self extinguishment in the event of a fire. This requires that additives be added to meet UK statutory regulation. In addition, the longevity and performance of Talalay Latex is increased by mixing the natural rubber with synthetic additives, to create more stable Talalay latex with greater longevity and performance than is possible with 100% natural non-blended Latex. In the UK, we utilise a 50/50 Mixture to create the required blend of Talalay Latex.