

A GUIDE TO OUR

Malai Promotional Products Range



What is Malai?/

Malai is a newly developed biocomposite material made from bacterial cellulose, grown on agricultural waste sourced from the coconut industry in Southern India. The word 'Malai' refers directly to the creamy flesh of the coconut and it is the coconut water (a by-product from the harvesting of this flesh) that sustains the bacteria whilst they are producing the cellulose, which is then in turn collected and refined until it becomes the finished material: Malai.



COCONUT FARM



MALAI MATERIAL IN VARIOUS COLOURS



Compostable

All ingredients that go into Malai making are compostable and shall biodegrade in the compost within 90 days.



Water resistant

It is water resistant although it prefers not to get wet as it loses some of its strength.



Strong

Malai's strength is comparable to vegetable tanned leather of similar thickness.



Recyclable

Malai is made from cellulose fibres that can be recycled into paper products.



Sustainable

All our ingredients are sourced from trusted partners all over India.



Healthy

It contains absolutely no artificial 'nasties' it will not cause any allergies, intolerances or illness.



Flexible

Malai is material with semi soft temper similar to vegetable tanned leather.



Breathable

Malai is quite porous as a material. We ensure all our coatings maintain this property.



Vegan

Malai is completely vegan and as such you could even eat it!



Why Malai?/

We are inspired by the beauty and purity of natural materials, and by the life-cycle and ecology of the coconut palm in particular.

We research and explore methods and sustainable resources to produce new biomaterials with impeccable environmental credentials due to our emphasis on the use of wholly natural and healthy materials.

UNSUSTAINABLE MATERIALS

Faux Leather



PVC is non-recyclable and non-biodegradable and releases volatile compounds (phthalates), isn't breathable.

Leather Processing



Energy, water consuming, polluting industry, is all that worth of producing a material for a handbag?

Solid Waste



2 kg of solid waste is produced for every 1 kg of leather.

Toxic Chemicals



There are more than 400 different types of chemicals used in leather processing, many of them are toxic to the environment. They are traceable in both leather and faux leather.

Malai aims to find alternative solutions to problems created by conventional production practises.

AGRICULTURAL WASTE



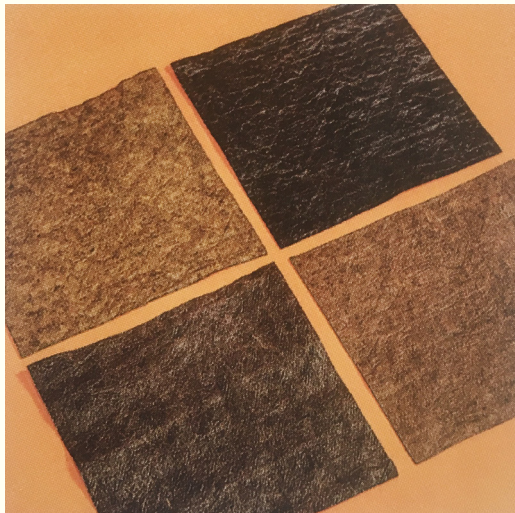
Natural Fibres

Banana plants are cultivated all over South India, Kerala is the biggest producer of all states. However, once the banana fruit is harvested the stem of the plant gets discarded or gets converted into biomass. A very good quality fibre can be extracted from the banana stem - we are using the same for making Malai.



Coconut Water

There is currently no use for this type of water and hence it's often released into drainage.



MALAI MATERIAL IN VARIOUS COLOURS

ENVIRONMENTALLY CONSCIOUS

Ecological



Malai is 100% biodegradable, has low CO2 emissions and is made entirely without using aggressive chemicals or plastics.

Economical



We are working on the development of a unique raw material sourcing system that will ensure 100% utilisation of raw material from agricultural waste. It is possible to form Malai into sheets of specific pattern/shape eliminating offcut waste. We have developed a process of 3D moulding of Malai - creating objects with no seams. Both sides of Malai have same appearance, both directions have the same tensile strength.

At the forefront of Malai's goals are practises that are environmentally and socially conscious.

SOCIALLY CONSCIOUS



Social

We work with traditional leather artisans in India for making products from Malai - in effort to sustain their livelihoods and moreover to preserve the unique skills that have been handed down from generation to generation during history of leatherworking crafts.



Closed-loop system

Our aim is to establish a working supply chain system that involves coconut and banana farmers who would gain additional revenue from selling us their coconut water and banana fibre. We bring in product that comes from nature and can return safely back to it in a form of nutrient.

How Malai is made/

We bring in a product that comes from nature and can safely return back to it in the form of a nutrient.

We have developed processes & technologies to produce Malai and achieve a point where we can design, mould and make it into seamless accessories and products.



MALAI FIBRES SETTLING IN THE VAT



BANANA FIBRES



GUM ARABICA



DAMAR NATURAL RESIN



BACTERIAL CELLULOSE

BASE INGREDIENTSBacterial
Cellulose

Natural polymer synthesized by bacteria *Acetobacter Xylinum* that feeds on water from mature coconuts.

It is cellulose in its purest form.

Natural
Fibres

Banana fibre, hemp fibre, sisal fibre.

Our base ingredient is a natural polymer synthesized by bacteria mixed with fibres for strength and bound together with natural gums and resins.

BINDING & COATINGNatural Gums
& ResinsNatural
Oils



O1 Collection

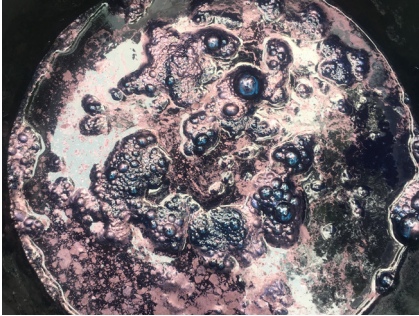
We work alongside Southern India's coconut farmers and processing units who find themselves with much coconut water 'waste' after they've removed the harvest of white flesh from inside the mature coconuts. Normally this waste water would be released into the drainage system, but this in itself causes pollution of water and the soil to become acidified.



O2 Fermentation

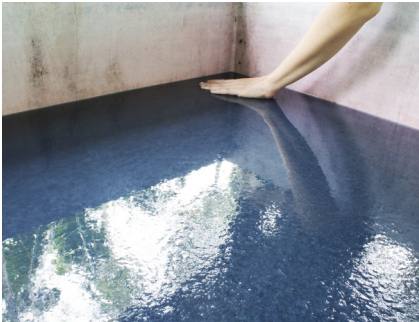
We rescue this coconut water, place it into vats and sterilise it, resulting in an energy-rich, entirely natural nutrient upon which our bacterial culture can feed. We combine the nutrient and the culture and then just let the bacteria do its thing. The fermentation period takes between twelve to fourteen days, at the end of which time: hey presto! A sheet of cellulose 'jelly' has been produced!





03 Natural colouring

A range of colours can be achieved through the addition of natural dyes, if so desired.



04 Formation

We harvest the jelly which then undergoes a process of refinement. It is enriched with natural fibres, gums and resins to create a more durable and flexible material which may then be formed into flat sheets in a range of thicknesses and textures, or moulded seamlessly into 3D structures.



05 Crushing & Coating

The final stages for creating Malai include leaving it to air-dry and then softening it whilst applying gentle a water-resistant treatment (without adding any plastic coatings or synthetic ingredients). We soften Malai through the process of mechanical crinkling and crushing to refine the temper of Malai.





Dispose/Recycle

When you feel your Malai product has reached the end of its lifecycle it can be disposed of in your compost bin (once any metal parts or trimmings have been removed). Alternatively we offer a recycling service to our customers: send us your old Malai product and receive 10% off your next purchase. (terms & conditions apply)



Moisturise

Malai is a very user-friendly material. Because of its entirely natural composition it is sensitive to humidity, much like paper or leather. To ensure it remains at its best we suggest applying a thin layer of polishing wax (either a clear shoe polish or a furniture grade wax) or coconut oil (to continue Malai's completely vegan credentials) to the surface to ensure it remains moisturised. This is especially advisable during hot, dry weather or after cleaning.



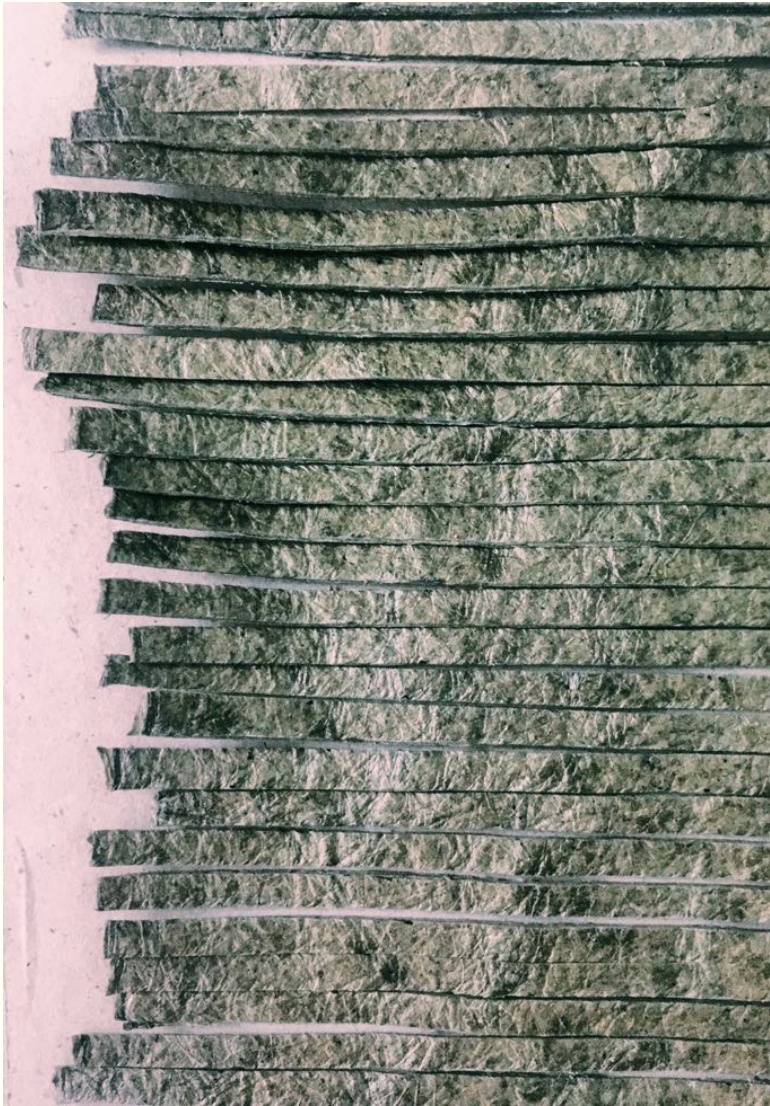
Repair

Although tough by nature and designed to remain in good condition for many years, Malai will eventually start to break down. We cannot predict the rate at which this will happen because it is very specific to its treatment and the environment. Although we do not operate a repair service, should damage occur please contact us and we will endeavour to suggest how it could be fixed.



Clean

Yup, don't panic if you spill something on your Malai or if it becomes dirty because it can be wiped clean with a damp cloth and then left to air-dry (although it won't survive a trip through the washing machine). We advise against drying with intense heat or ironing it as this may cause damage. When it has dried, applying natural wax will help restore it to its original condition.



STRIPS OF MALAI

Finishing Edges



If left unfinished, cut edges of Malai can fray slightly over time and wear. We recommend to seal them applying wax, water-based glue or secure them with a single line of stitching.

Texture



It comes with a natural texture that if desired can be made smoother by using a calendering process.

Cutting



The best way to cut through Malai of any thickness is to use a sharp bladed knife. We also recommend to cut Malai with a pair of sharp scissors. Malai is also suitable for laser cutting.

Joining



Pieces of Malai can be joined using hand or machine sewing, glueing or any other technique you would probably use for joining leather and it's imitations. Please use an industrial or leather sewing machine for better results - the material is quite robust. We do recommend to back Malai with an adhesive lining if the gsm is lower than 600. We are working on improving this and we hope to bring the results of our material research to you as soon as possible.

Embossing



Malai can be embossed using stamps or any kind of leather\textile embossing machine.

Printing



Malai can be screen printed on using pigments suitable for cellulosic fibres.



NATURAL DYES IN THEIR RAW FORM



Colours

Malai is available in a range of colours achieved through the use of mordant-free natural dyes and it can develop a soft sheen or patina over time. All our dyes come from the flower, bark or tuber of plants found locally in India.

Natural



Dark Grey



Madder Red



Dark Indigo



Dusky Pink



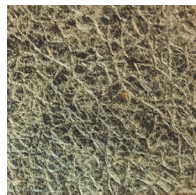
Cumin Yellow



Cutch Brown

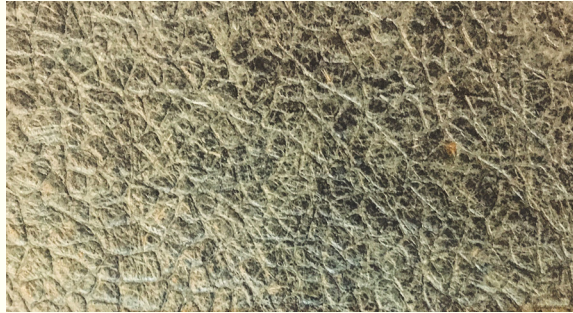
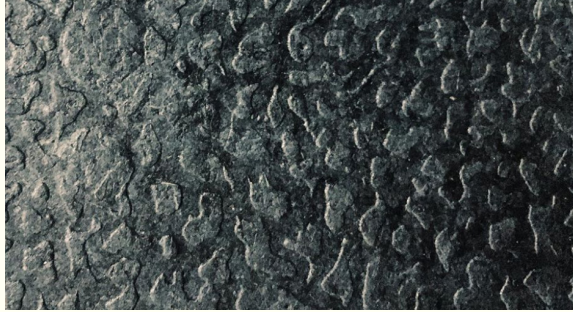


Khaki Green



Light Indigo





MALAI WITH DIFFERENT TEXTURES

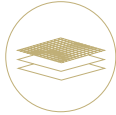
MATERIAL DETAILS

Sheets



- > 80cm x 120cm
- > 80cm x 95cm
- > moulded products (work in progress)

Finish



- > matt
- > semi-glossy

Texture



- > malai natural texture
- > malai embossed texture (upon request)

Malai is highly customisable when it comes to weight. The higher the weight the stronger the material. Thinner weights are more flexible and softer. We can accomodate the material weight depending on your application.



Thickness(Gsm)

- > 1mm 400-450 gsm
- > 1-1.5mm 550-600 gsm
- > 1.5-2mm 750-850 gsm



MALAI ACCESSORIES, 2017

What we do/

Material Research & Development. We research materials that are based on Bacterial Cellulose, Natural Fibres and other ingredients of natural origin. We focus on developing materials that are biodegradable, have low environmental impact and are safe to make, use and dispose of. Developing materials with specific properties, appearance, behaviour and architecture is in our scope.



BOTTLES WITH BACTERIAL CELLULOSE CULTURES



MALAI RESEARCH



Material research

We research and study locally available raw materials (coconut shells, coir, natural fibres, natural resins..) and analyse their potential for being converted into materials and products. We then take the journey further, developing and/or identifying technology to process these materials into finished products.



Material development

We can develop variations of Malai material and materials based on bacterial cellulose according to the client's specifications and material's application.



Colour & texture development

We work exclusively with natural dyes applied on cellulose fibres. We can develop customised colour palettes according to client's specification.



Customised low volume products

We ensure low volume production of stationary, packaging and fashion accessories and products employing local manufacturers and craftsmen.



COCONUT WORKER



Working with Malai.

Our aim is to work with local coconut and banana farmers, collaborate with leather artisans, designers, maker communities and companies that are keen to explore R&D.

Local Coconut Farmers

We work in close partnership with the local coconut farmers and processing units in our region of South India who provide us with their waste water from mature coconuts, the primary resource we need to start the growth of our bacterial cellulose, which will eventually be transformed into Malai.

Leather Artisans

We work with traditional leather artisans all across India who have been in particularly difficult situations in society. This group of artisans face a shortage of leather material and are therefore no longer able to develop and preserve their skills. Many of them have been forced to find menial jobs in factories. We encourage them to use their skills applied on Malai material and work towards sustaining their craft and abilities.

Designers

Malai product line is a small collection of products made from Malai designed and made in collaboration with various international designers eager to experiment with our material. It is made in collaboration with local artisans focusing on exploring material's use across various fields like upholstery, furniture, footwear, bags, accessories...etc.

Maker Communities

We also collaborate with local communities of makers as well as working with suppliers whose ethical approach is transparent and verified.

Companies

We are very keen to work with companies that are interested in R&D and the adoption of new manufacturing techniques.



BACKWATERS OF KERALA



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