



List of Semi-Products made of Industrial Hemp and Potential Applications



Semi-fabrics picture	Semi-fabrics description	Current, potential application/s	Industrial sectors and demand	Competitive with ... Replacing ...
	<p>Shives sorted in various length from 0.5 cm to 5 cm.</p>	 <p>Hempstones and hempcrete as load bearing bricks, gets hard and stable with lime, water resistant with casein, flame retardant with waterglass mixed in.</p> <p>Also under development is an insulation matt made of shives in order to replace styropor / polstyrol.</p>	<p>Building & construction</p> <p>Stones and bricks in various sizes “breathing” to regulate humidity.</p> <p>Best current producer of hempstone: hanfstein.eu</p> <p>Extreme demand from current producers of hempstones all over Europe since architects and builders in Europe decide for this material increasingly.</p> <p>Enormous demand for hemp processing lines also from a large cement and building materials producer in Thailand.</p>	<p>Conventional bricks, Convention concrete</p> <p>The new products being important carbon capturers and carbon savers compared to the conventional building materials.</p> <p>Creates natural climate of housing and living, acts as a buffer when outside temperatures change quickly.</p> <p>Doesn’t smell at all.</p>



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	<p>Long, very strong, parallel fibres, up to 1.80m long, fibres in parallel order from hemp specie "Futura". Even one year on the field, it is still very hard almost impossible to scratch.</p>	<p>Ropes</p> <p>Arming in hempwood which is being fabricated in bundles of that fibre bonded/glued with a mixture of traditional bone glue "glutin", casein (making it waterproof) and waterglass (making it flame-retardant).</p> <p>Sports equipment like walking sticks, ski sticks, skis, snowboards, tennis rackets, ... light, strong, shock absorbing, resilient.</p>	<p>Being discovered by designers in the furniture and bedding industry to save and replace wood, especially where special wood boards have become rare. Parquet, laminates, flooring.</p> <p>Leki brand develops walking and ski sticks with long hemp fibers.</p>	<p>Replacing wooden boards and constructive elements of furniture.</p> <p>Since hemp grows 4 times faster than wood, the carbon capture of hemp is 4 times higher than of a forest with pine trees for instance.</p>
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	<p>Strong, long fibres, rougher or finer, not washed yet, fibre in parallel order</p>	<p>Ropes, yarns, technical cloth, cloth, and fashion. Sun blinds, textile covers, curtains, carpets, bed linen, kitchen ware, ...</p>	<p>Fashion designers, tailors, textile workshops keep on looking and asking for hemp yarn and cloth on and off, while not being happy with the current supply from Far East.</p>	<p>Competitive since cotton production has a dramatic ecological footprint, and Far East ignoring any ESG goals in the production and supply of fibre hemp. In addition, the current hemp fibres have become expensive.</p>
	<p>Hemp fibre wool with little shives, fibres in chaotic order</p>	<p>Insulation material and matts fillings in bedding, in pillows, in upholstery, fleeces. Becomes better water resistant with casein, flame retardant with lime and with waterglass, is being avoided by insects and mice.</p>	<p>Building and construction industry, builders and architects asking for it, actually large amounts queuing up for delivery at last.</p>	<p>Competitive with insulation wool made of stone, glass and polystyrene, much more comfortable to work with, natural climate of housing and living. Doesn't smell at all.</p>

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	<p>Short cut fibres customizable to particular applications</p>	<p>Heavy insulation mats with their weight particularly effective for noise protection and insulation against changing temperatures. Can become better water resistant and flame retardant with casein and waterglass. Soft or hard.</p>	<p>Quite novel and surprising, no promotion made so far. Demand can be comparable to the current market demand for HOMATHERM and other heavy insulation mats.</p>	<p>Very competitive to HOMATHERM thanks to similar behaviour and comfort, but even better ecological footprint and lower prices.</p>
	<p>Fleeces in various weight, thickness, and stiffness</p>	<p>Geotextiles in farming and in road construction, protection against erosion. Shock, noise, sound absorber in building & construction, and in the car industry, layer material in composites, filters, base material for carpets, ...</p>	<p>Big amounts are being required by the farming industry instead of plastic folio.</p> <p>Architects and builders asking for it to reduce plastic materials in flooring.</p>	<p>For instance very well competitive to replace the current black folios in farming to cover farmland, i.e. in Almeria (Spain). In any dimension a much better ecological profile.</p>
	<p>Pressed plates made of fleece, polypropylene and fibre arming in various strength, thickness, flexibility, stiffness and sizes max. 1200x3000 mm</p> 	<p>Replacing wooden pallets. Boards and constructive elements for furniture. Flexible or stiff, thick or thin to be used for shaped, moulded forms, shallows, body parts.</p> 	<p>For instance, pallets are currently tested in logistics and transport,</p>	<p>Competitive with conventional wooden pallets due to resistance, weight, price.</p> <p>Hemp boards being fancy and asked for innovative furniture. Competitive with OSB-boards, pressed wood boards, and others made of wood. Better ecological profile.</p>



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	<p>Engineered plates made of fleece, organic polypropylene from sunflower shells (goldencompound.com) armed with short and long fibres as parallel or chaotic layer</p>	<p>Boards and constructive elements for furniture and engineered, organic composites. Flexible or stiff, thick, or thin to be used for shaped, moulded forms, shallows, body parts.</p> <p>Shaped and laminated body part (early stage)</p>	<p>Being applied in furniture design and construction at universities and some first workshops. Being applied and tested at Bangkok University for constructive elements and body parts to be proposed to the car industry.</p>	<p>Competitive with glass and carbon fibre composites, occasionally more resilient in case of being damage, even stronger, more comfortable working material (no hazardous dust nor fumes), better ecological profile, fully competitive in pricing.</p>
	<p>Organic carbon fibre plate, very strong and light, armed with a woven fabric of carbonised hemp fibre, currently pressed with a fossil Benzophenone. Replacing the fossil elements in Benzophenone by organic, renewables ones has been started.</p>	<p>Light, strong body parts, shells, and shaped parts.</p>	<p>Use testing and certification in progress.</p>	<p>Competitive with glass fibre composites, aluminium with a better ecological profile.</p>

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	<p>Organic carbon fibre brake pad, pressed from a mixture of carbonised short hemp fibre in Benzophenone. Replacement of Benzophenone started.</p>	<p>Brake pads</p>	<p>Use testing and certification in progress.</p>	<p>To replace current brake pads Much better ecological profile when avoiding hazardous brake dust.</p>
	<p>Hemp brown paper</p>	<p>Wrapping paper Cardboard Bags for fresh fruit and vegetable in retail.</p>	<p>Use testing and certification in good progress. Recent, urgent demand for relative hemp processing lines.</p>	<p>Replacing wood as raw material. 4 times bigger carbon capture than paper made of wood.</p>