



Made of Air

# Turning biowaste to carbon-negative materials – What we do at MOA

From wood waste to biochar and carbon-negative compounds: that's the revolutionary process developed by Made of Air. We create materials that can replace traditional high emitters like fossil plastics and aluminum in the built environment and consumer goods.

Made of Air's mission is to reverse climate change. We create carbon-negative compounds and panels that can replace incumbent materials like fossil-based plastics and aluminum in the built environment. All traditionally high greenhouse gas emitters; substituting them will be crucial to meet the global climate goals.

Our materials lock in more carbon dioxide during their production than they release. Currently, we achieve that in a cradle-to-gate scenario: all the way from wood waste purchase to production and delivery of our thermoplastic compounds to our partners, we remain carbon negative.

## **Biochar and compounding: the keys to our process**

The key ingredient of our composite material is biochar, a pyrolyzed biomass with very high carbon content. Biochar is traditionally used as a soil fertilizer, but our innovation has revolutionized the material's potential, making it possible to create our thermoplastic compounds. This proprietary process takes the carbon removal potential of biochar and connects it to the scale of manufactured goods with a production volume relevant for the climate crisis.

Regional forestry industries provide us with our raw material, in the form of residual sawdust or wood chips, from which we produce the biochar. Tons of waste, typically incinerated to generate energy, landfilled or left behind to decompose, re-releases the CO<sub>2</sub> sequestered by trees during their lifetime back into the atmosphere.

This is where we step in and break the natural cycle by taking this biomass and heat it to high temperatures in a low-oxygen environment: the key to converting that waste into elemental carbon. The CO<sub>2</sub> sequestered from the atmosphere becomes permanently locked in the biochar.

The second step of our innovation uses proprietary methods to process the biochar and combine them with biopolymers sourced from sustainable suppliers. This is then utilized to create pellets

## **Carbon-negative materials**

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that can be transformed into final products through various forming methods. As a result, these products go from creating emissions to reversing emissions.

We have created several of these compounds, or as we sometimes call them, “recipes,” to address a variety of use cases. One is suited for the built environment; another is injection molded to create consumer goods. Our research facility, Carbon Lab, is constantly at work on new products and features to meet our customers’ needs.

### **From built environment to consumer goods**

The built environment and consumer goods are our primary industries. The former is especially important in a number of ways: the average lifespan of a building product in the range of 30-50 years means we can sink carbon for half a century.

Another reason is that the built environment at large contributes to about 40% of all global emissions; 11% alone emanating from emissions related to construction materials. Reducing construction emissions will be vital to reaching climate goals, especially considering that embodied carbon accounts for 10-20% of EU buildings’ CO<sub>2</sub> footprint today, but already reaching rates of 50% in countries with low-carbon energy.

Finally, it is the built environment in which we can scale the production and roll-out of Made of Air material, building on our successful collaboration with Audi for a car dealership in Trudering, Germany. Our HexAudi rainscreen panels sequestered over 10 tons of CO<sub>2</sub>, replacing a key, non-structural component of a building made of aluminum.

With our recent partnership with Arktura, a leading manufacturer of high-end design-focused architectural wall, ceiling, and facade panels, we are going to continue to deliver high-quality building products at scale.

### **Replacing high emitters at scale**

Our goal is to remove carbon, not to reduce emissions alone. Made of Air wants to replace traditional high emitters with sustainable and climate-friendly materials on a large scale, which we already know is possible.

We’re also working on different end-of-life scenarios to bring a truly circular product to the market which can be taken back to be reformed and repurposed via various recycling methods. This is the final ingredient of our recipe.

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### About Made of Air:

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Founded in 2016, Made of Air produces a carbon-negative thermoplastic compound. The company uses low-value wood waste to create biochar, a material with high carbon content. This carbon sequestration product can be used in a wide range of applications where durability and long lifetime are necessary effectively transforming products from creating emissions to reversing them. Made of Air has partnered with large consumer brands such as H&M and Audi, delivering carbon-negative materials to their supply chains.

For more information on Made of Air, visit <https://www.madeofair.com>.

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