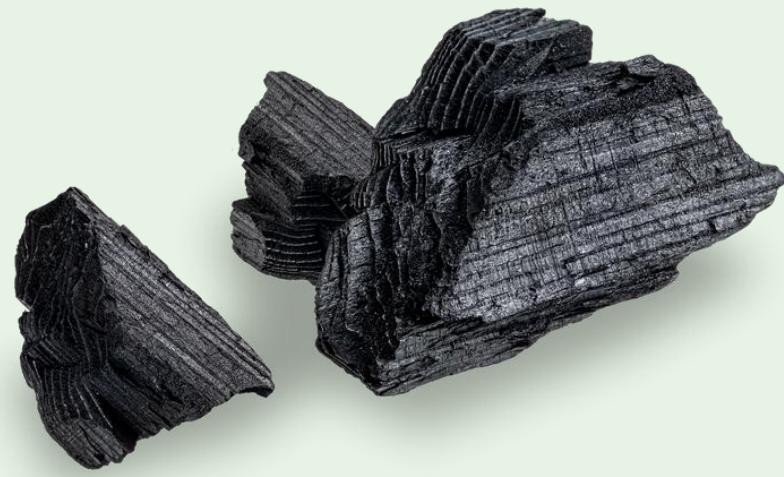


 www.karelianpaju.fi

KarelianPaju

High-end biochar on industrial
scale



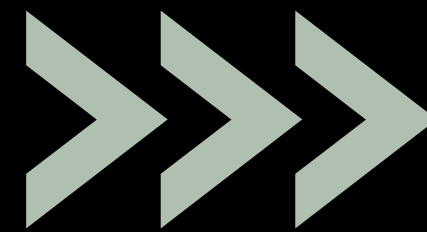


KARELIAN PAJU

Biochar from Finland

- **Founded 3/2022**
- **First production tests in 2022**
- **Operations have evolved from willow production to biochar production**

Industrial-scale biochar production facility to be completed during Q1 2025, located in Eastern Finland



Capacity over 4 000 tons of biochar per year

Licensed to receive 10 000 tons of A/B-class recycled wood per year



BIOCHAR



We manufacture biochar tailored for our customers' use cases



Source material

Recycled wood, willow or birch



Grain size

0-50 μm , 50-100 μm
0-2 mm, 2-5 mm, 5-10 mm
and unfiltered



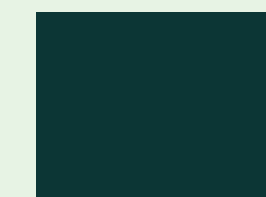
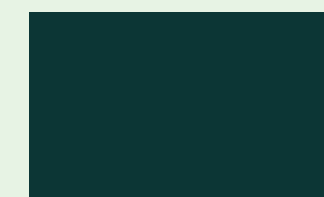
Delivery

In bulk bags to Europe



Price

approx. 250 €/m³



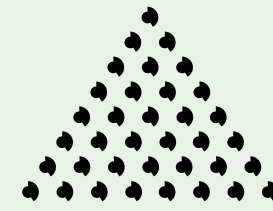


GRAINS

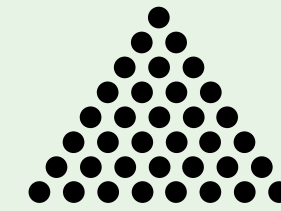
Biochar available in various grain sizes.
Can be **optimised based on your application.**

AVAILABLE GRAIN SIZES

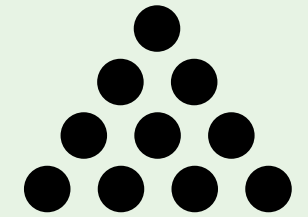
0-50 μm



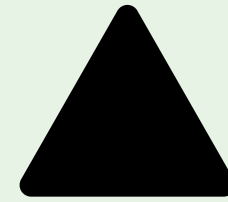
50-100 μm



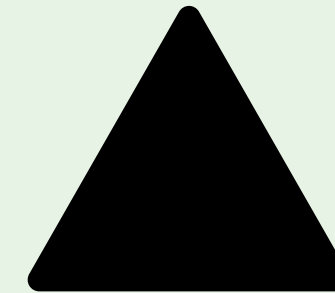
0-2 mm



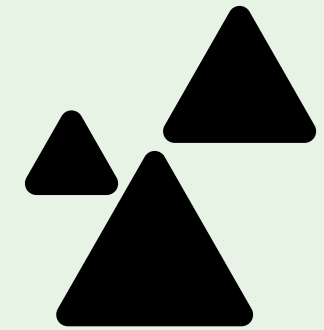
2-5 mm



5-10 mm



UNFILTERED



0-100 μm



5-10 mm



HOW THE SOURCE MATERIALS DIFFER FROM EACH OTHER?

We help you to pick the right material for your needs.



Recycled wood

Cost-effective circular economy solution

Use cases

Soil improvement, water treatment, composting and carbon sequestration



Willow

Porous structure with high specific surface area, effective nutrient binder

Use cases

Water and fluid treatment, carbon sequestration, activated carbon products



Birch

Particularly consistent material

Use cases

Activated carbon, premium water and fluid treatment, precision agriculture



QUALITY

Our biochar's quality is tested to meet **REACH quality guidelines**



Surface area
ad. 550 m²/g (BET)



Carbon content
ad. 95,2 %



Water holding capacity
650 %



PAH compounds and heavy metals
Below the limit values, also with recycled wood.

	EBC - FeedPlus limit value (most strict)	Karelian Paju Biochar
H/Corg	< 0.4	0,12-0,2
Pb	10 g t-1 DM	< 0,01-6 g t-1 DM
Cd	0,8 g t-1 DM	< 0,2 g t-1 DM
Cu	70 g t-1 DM	2-7 g t-1 DM
Ni	25 g t-1 DM	1 g t-1 DM
Hg	0,1 g t-1 DM	< 0,07 g t-1 DM
Zn	200 g t-1 DM	13-40 g t-1 DM
Cr	70 g t-1 DM	13-22 g t-1 DM
As	2 g t-1 DM	0,8-2 g t-1 DM
16 EPA PAH	6 ± 2,4 g t-1 DM	1,3-1,6 g t-1 DM
8 EFSA PAH	1,0 g t-1 DM	N/A*
benzo[e]pyrene benzo[j]fluoranthene	< 1.0 g t-1 DM	< 0,1

*Not detected in Eurofins EBC-tests



Benefits of biochar

IN FILTRATION USE

Infrastructure and industrial filtration solutions benefit from the properties of biochar.

1

Responsible solution

Produced from renewable and/or recycled raw materials

2

High specific surface area

Even over 500 m²/g

3

Stable

Biologically and chemically stable material

4

Binding porous structure

Binds nutrients, heavy metals, and contaminants

5

High water holding capacity

Up to 6,5 times of its own weight

6

Enables cascade use

i.e. preliminary use as a feed additive and secondary as a fertilizer

Benefits of biochar

IN GROWING MEDIUM USE

Agriculture, infrastructure and soil regeneration projects enhance their operations with biochar

1

Growing medium

The need in seedling production decreases, and the lifespan increases

2

Binds water up to 6,5 times its weight

Enhances water absorption and thus reduces irrigation costs

3

Stable

Biologically and chemically stable material

4

Binds nutrients for plants

Lowers fertilization costs and protects environment by reducing nutrient leaching



Karelian Paju – biochar

- Proven high quality
- Suitable also for food plant substrate
- Possibility to customize for customer needs

BUT ISN'T ALL COAL BAD?

- Biochar can be produced from biomass whereas fossil is mined
- Biochar is a method to stabilize carbon and keep it out from atmosphere

Biochar

Fossil coal

Origin

Renewable biomass such as wood and recycled waste wood

Extracted from coal deposits, non-renewable

Production

Pyrolysis, meaning biomass is heated at a high temperature in the absence of oxygen

Forms in the soil over a long period of time

Usage

Soil improver, filter, additive, carbon sequestration and industrial applications

Energy production, metallurgy, filtration and other combustion purposes

Environmental effects

Carbon sequestration method utilizing waste streams and improves soil quality

Causes carbon dioxide and other emissions



REFERENCES

Our biochar has been successfully used in several projects

In research projects

BlackGreen 1 & 2

PlastLIFE

SAMPO

In addition

In individual articles/projects



One reason why our biochar is of such high quality is our extensive network of partners, which includes, among others:

BLACKGREEN
Pohjois-Karjalan biohiiliohjelma

BIOENERGIA

**BUSINESS
JOENSUU**

Luke
LUONNONVARAKESKUS

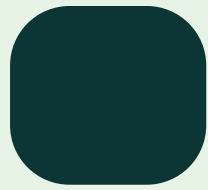


**OULUN
YLIOPISTO**

**UNIVERSITY OF
EASTERN FINLAND**

ProMikko

**LUT
University**



INFORMATION

Here's some good evening reading on biochar!

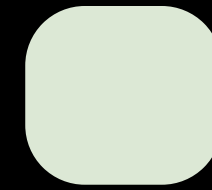
[Helsinki city \(ENG\)](#)

[VYL Biochar guide \(FIN\)](#)

[Rest till Bäst – manual \(ENG\)](#)

[30% savings in irrigation water](#)

[Stockholm city \(SWE\)](#)



HISTORY

Biochar has been used for **over 2,500 years** in the Amazon region. The biochar-enriched soil from that time was called "**terra preta.**"

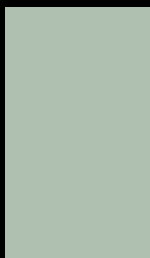


[Glaser, B., Haumaier, L., Guggenberger, G., and Zech, W. (2001). The Terra Preta phenomenon: a model for sustainable agriculture in the humid tropics. *Naturwissenschaften* 88, 37-41.]



**“Charcoal, when mixed with the soil, makes it
fertile and helps crops grow.”**

Pliny the Elder, Naturalis Historia, year ~100



LET'S CONNECT AND TALK MORE ABOUT BIOCHAR



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