

MARKET POTENTIAL - ACTIVATED BIOCHAR FROM SEWAGE

Origin:	Cellulose recovered using screening
Customers:	Sewage treatment plants, waste incineration plants, swimming pool industry etc.
Application:	Adsorption of pharmaceuticals and chemicals



Sewage contains valuable substances that can be used circularly as a raw material for biobased products. However, this potential is currently underused. The European Interreg project WOW! wants to change this by extracting cellulose, lipids and fatty acids from sewage and producing biochar (activated carbon), biofuel, bio-oil, acetic acid and PHA bioplastics. This factsheet summarizes the results of the Market Potential Study of activated biochar. [Click here](#) to read the full report.

PRODUCTION:

For the production of biochar the screenings from fine sieving of sewage are used. In this first step cellulose is recovered, dewatered and then dried. In a thermal degradation process (pyrolysis) the cellulose is converted into biochar, bio-oil and acetic acid. The biochar is activated to activated carbon.

QUALITY REQUIREMENTS:

First results on the elimination performance of activated carbon based on biochar from sieving shows that 65% of the biochar can be activated. The activated biochar has a mineral fraction of 6.9 wt%. The adsorption capacity is lower in comparison to a reference PAC.

PRODUCTION QUANTITIES WORLD WIDE 2014:

1,4 Mio. t activated carbon per year with a rising trend.

COLLECTABLE QUANTITY AT STP IN NORTH WEST EUROPE (THEORETICALLY):

226,000 t activated biochar per year.

MARKET PRICE FOR CONVENTIONAL PRODUCTS:

1.5 – 2 €/kg activated biochar.
4-6 €/kg chemically activated char
1-1.4 €/kg biochar

MARKET PRODUCTION PRICE FOR BIO-OIL FROM SEWAGE:

The biochar production price can compete with the market price for activated biochar under optimised conditions. It must be taken into account that the by-products bio-oil and pyroligneous acid are also sold.

APPLICATION:

The biochar produced can be used to remove pharmaceuticals at sewage treatment plants instead of activated carbon from fossil sources. The activation process needs to be optimised to achieve higher removal efficiency.

DRIVERS:

The main driver for this market is sustainability. The production of activated carbon in some markets, e.g. in emerging markets is not environmentally friendly. A further advantage is the direct use at the sewage treatment plant for removal of organic micropollutants.

MORE INFORMATION:

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