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Mira Carbon®

Water purification with CarbonFiber.

— For water quality purification and the ecosystem maintenance of a river,a lake and the sea —

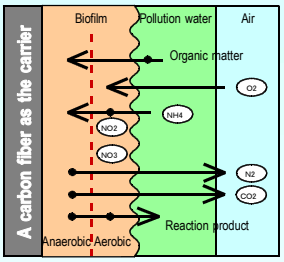
Water quality purification using carbon fiber is economical and effective method. And it is low environmental impact. Active biofilm are formed by high bioaffinity of carbon fiber, and its microorganisms decompose contaminants. On the other hand, biosonic radiates from carbon fiber activate microorganisms and gather fishes. Carbon fiber exercises seaweed bed function.

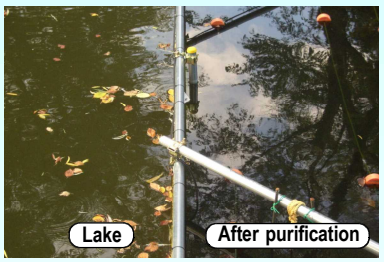
What is CarbonFiber " Mira Carbon® "?

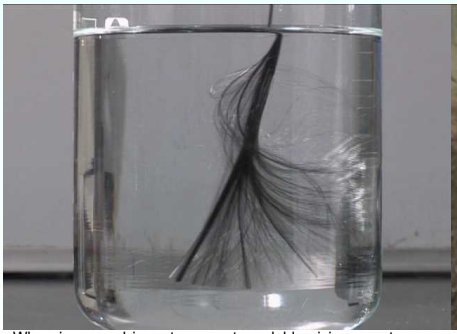
- CarbonFiber is a “fibrous carbon substance having a fine graphite crystal structure” which is manufactured by carbonizing acryl fibers by a special heat treatment process. (Polyacrylonitrile (PAN) type)
- CarbonFiber is generally said to be a “light, strong, corrosion-resistant” advanced functional material. It is widely used in diverse applications, taking advantage of its combination of properties as a lightweight materials with excellent mechanical properties, and its excellent properties as a carbon material.
  - Specific strength (tensile strength/specific weight): 10x that of steel.
  - Specific modulus (tensile modulus of elasticity/specific weight): 7x that of steel.
  - Applications: Aircraft, automobiles, reinforcing material for concrete structures, fishing rods, golf clubs, etc.
- CarbonFiber for use as a water purification materials are given a special surface treatment to cause the fibers to expand in water.
- CarbonFiber for water purification consist of clusters (bundles) of 12,000 or 15,000 ultra-fine, 7μm filaments.

Removal rate of water quality purification using CarbonFiber items（%）

Items	River	Lake	Sewage
Biological Oxygen Demand（ＢＯＤ）	50～70	20～90	90～95
Suspended Solid（ＳＳ）	50～70	20～90	90～95
Total Nitrogen（ＴＮ）	10～30	10～30	30～70
Total Phosphorus（ＴＰ）	10～50	30～90	30～50
Chl-a		10～90	

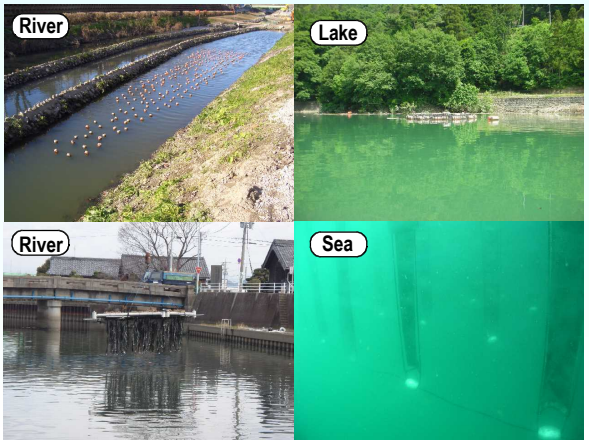




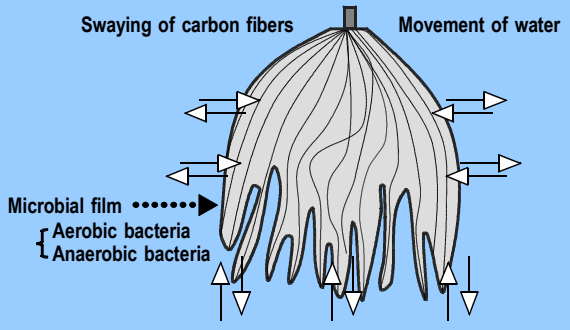


When immersed in water, a water-soluble sizing agent dissolves, and the filaments unravel and spread.

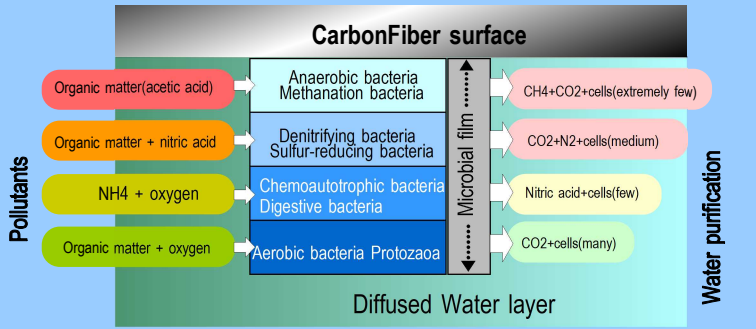
Pollutants are adsorbed and microorganisms are fixed on the large surface area of the carbon fiber.



Mechanism of water purification



Swaying of the carbon fibers causes movement of the water and decomposition of pollutants.



Main nutrients and metabolism products of microorganisms in microbial film

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MiraCarbon Water Purification Method

●Installation Plans

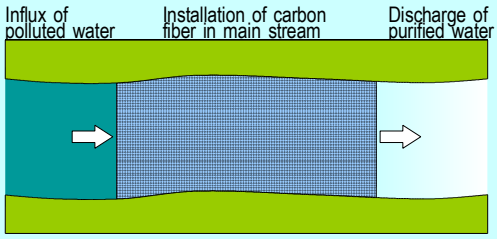
With carbon fiber, a large water purification effect can be obtained simply by installing the carbon fibers in water. However, the manner in which this effect appears differs greatly, depending on site conditions such as the water area, water depth, amount of water, water flows, water quality, etc. and the method of installation and amount of carbon fiber installed. In cases where higher cost-effectiveness is required in water purification, the optimum installation plan is necessary.

●Classification of Direct Environmental Water Purification Methods Using MiraCarbon.

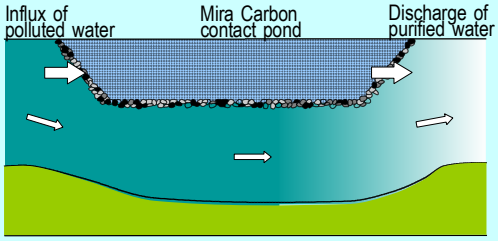
- River purification
  - Direct purification methods
    - Main stream installation method
    - Contact pond installation method
  - Influx water purification method
  - Separation method
- Lake/marsh purification (closed water bodies)
  - Direct purification methods
    - In-lake circulation method
    - Inlet/outlet method
    - In-lake individual installation method
  - Influx water purification method
  - Separation method
- Purification of sea water areas (Inland seas, closed sea water bodies)
  - Direct purification of water area

●Instructions for use

1. Set up carbon fiber water purification materials in polluted water, then contaminants and microorganisms stick to it. Microorganisms activate gradually, and decompose contaminants.
2. When surplus sludge stick to carbon fiber and decompose speed became slow, please wash in water.
3. When put a carbon fiber out of the polluted water temporarily, keep wet condition.
4. The carbon fiber can use a long term, because it does not deteriorate or rot.

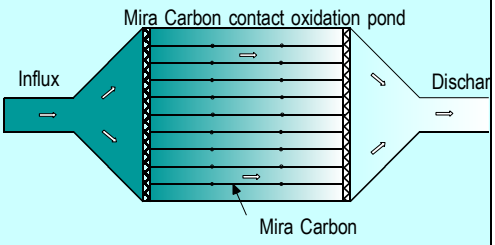


Main stream installation method

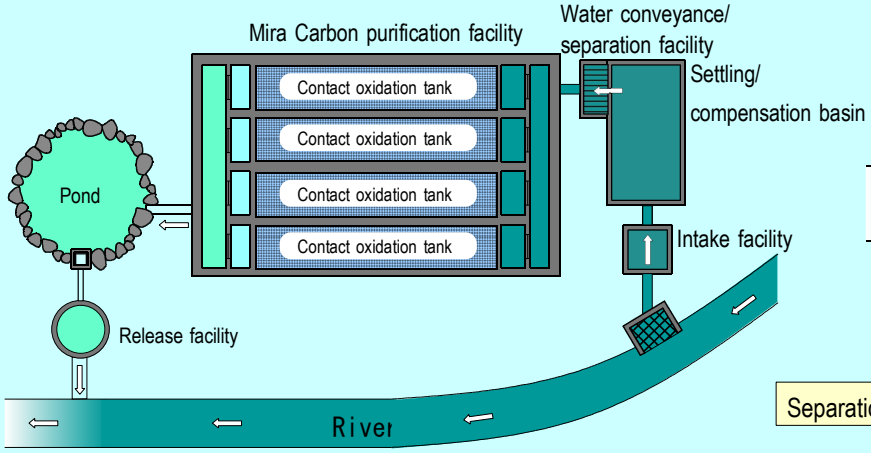


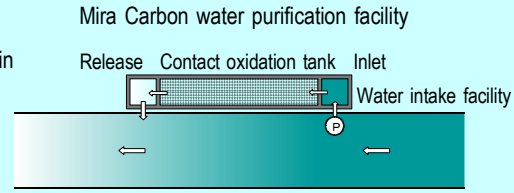
Contact pond installation method

Direct Purification Methods for Rivers



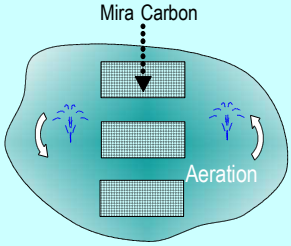
Influx water purification facility （River,Lake）



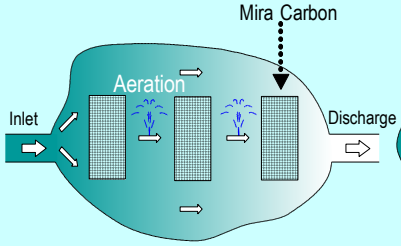


Separation Method （River,Lake）

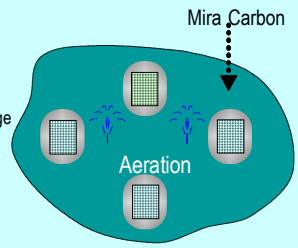
River Separation Method – Direct Purification Facility



In-lake circulation method

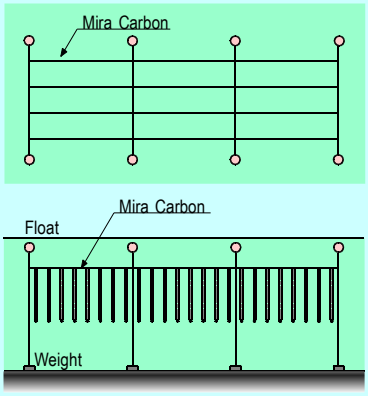


Inlet/outlet method



In-lake individual installation method

Direct Purification Methods for Lakes



Direct Purification Methods for Sea

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SO-EN CO.,LTD

Sorimachi-building 1665-1 Shinbo-machi
Takasaki Gunma 370-0018 JAPAN
URL https://so-en.net/ email:soen.net@gmail.com
TEL +81-27-352-4857 FAX +81-27-352-4875

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