

## **diamond electrode**

The technology of the treatment of drinking, process, and waste water with boron-doped diamond electrodes has been discovered and explained only in the last decade.

### **BORON DOPED DIAMOND ELECTRODE**

Pro aqua produces diamond electrodes with boron doped diamond particles. Boron doping is necessary to insure the conductivity of diamonds which actually are non-conductive. If conductivity is given the diamond facilitates water electrolysis at high level. Numerous oxidizers such as OH-radicals are produced.

### **OXIDIZERS**

The production of oxidizers directly from the water and its contents depends on the electrodes applied and their electro-chemical potential. This is where the diamond electrode starts, it produces such a high potential that OH-radicals can be produced to a necessary amount. This result is only possible with boron doped diamonds. The treated (waste) water contains therefore a mix of oxidizers such as OH-radicals (OH<sup>-</sup>), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), and ozone (O<sub>3</sub>), but also chlorine when salt (NaCl) is contained in the water.

<b>oxidizers</b>	<b>symbol</b>	<b>electro-chem. potential [V]</b>
OH-radicals	OH <sup>·</sup>	2,80
oxygen atom	O <sup>·</sup>	2,42
ozone	O <sub>3</sub>	2,08
hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>	1,78
chlorine	Cl <sub>2</sub>	1,36
oxygen	O <sub>2</sub>	1,23

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### FLOW-THROUGH CELL

Depending on such parameters as conductivity, degree of contamination, aim of reduction etc., one or more pro aqua diamond electrodes are installed in flow-through cells in order to be able to produce the necessary oxidizers (OH-radicals, ozone, hydrogen peroxide, chlorine, etc.) directly from the (waste) water. The oxidizers then decompose organic pollution (chemical oxygen demand reduction) or kill bacteria (disinfection).

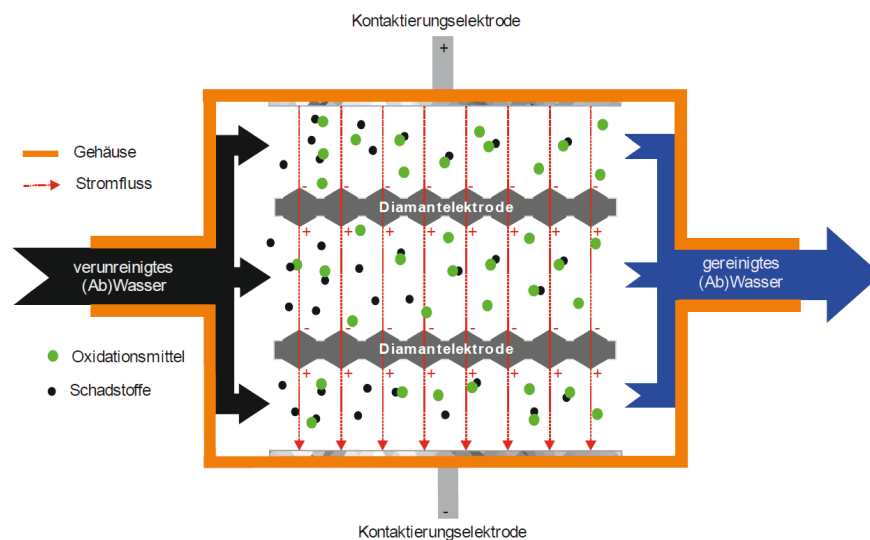
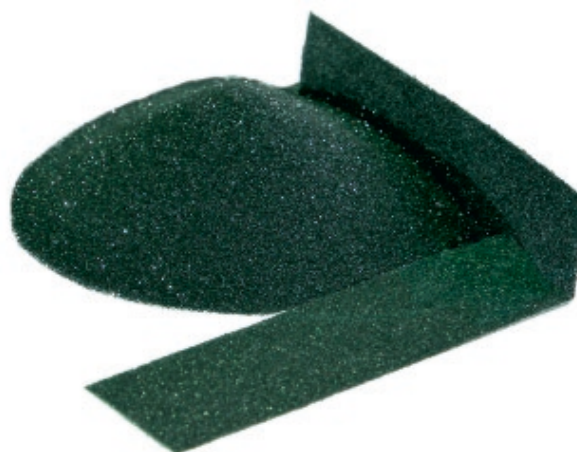


diagram of a pro aqua flow-through cell



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