

TOC (total organic carbon / dissolved organic carbon)

The TOC in ultrapure disturbing because of some techniques may lead to the possible deposits " focal points" . By irradiation with UV at 185 nm, oxidation of hydrocarbons to carbon dioxide is possible. The radiation intensity depending on the output parameters at about 1.200-6000 J / m². In this case, most of the TOC is already eliminated by the conventional methods such as:

Raw water	1-4 mg / l
Reverse osmosis by	< 0.2-0.5 mg /
strongly basic anion exchange according	<0.05 mg / l = 50 ppb
to after UV oxidation	< 1-3 ppb

The success of prediction is as yet uncertain , because different hydrocarbons are oxidized by UV 185 nm only partially. Create analyzes , which are hydrocarbons in water, yield only each a " torque value " .

The TOC reduction can be done by two process versions depending on the requirement , the TOC photolysis and photolytic water splitting .

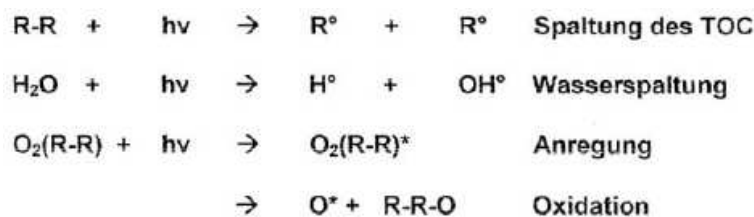
The reaction products of the TOC photolysis subsequently react with the radicals formed from the concurrent water splitting.

Not always there is a complete mineralization of TOC . This depends on the nature of the TOC - former. Influencing factors are the molecular weight , the constitution of the materials and number of the multiple bonds in the molecule.

Photochemically -resistant organic reaction products of photolysis , however, usually have an increased polarity. A separation is made possible in a downstream adsorber. In this way a TOC concentration in demineralized water of 1 ppb is achieved.

At wavelengths < 190 nm predominates in the irradiation of water photolytic water splitting all other reactions. The oxidation of TOC is done by the OH radicals formed from water splitting . The splitting of water takes place in a very thin layer of water to the the UV lamp enveloping quartz tube.

Direct photolysis of TOC with subsequent oxidation



UMEX use S-Quartz for TOC application. It is more efficient with this type of quartz. Each pass reduces by 70% the ppb.

Photolytic water splitting with subsequent reaction

