The Elemental™
PFAS Destruction System

A Permanent Solution for PFAS Waste

The Elemental™ is Claros' proprietary technology that allows for the **total destruction of toxic persistent chemicals**, including long, short and ultrashort per- and polyfluoroalkyl substances (PFAS), into their natural basic elements and harmless byproducts.

This destruction process works on:

- Wastewater and landfill leachate
- Concentrates from ion-exchange resins, reverse osmosis, activated carbon or foam fractionation systems
- Fire fighting foams and their runoffs

Available treatment systems:

- 5L, 10L and 100L batch reactors
- 1,000L-2,000L systems (available upon request)

The Elemental™ PFAS Destruction system is a low energy, small footprint, proprietary photochemical process that operates at room temperature and atmospheric pressure. The process can be used in a batch or continuous mode with low/easy maintenance. The by-products of the process are free fluoride and CO_2. The system can be scaled up with low CapEx and energy cost and installed and managed on-site.

INCINERATION AND LANDFILLS ARE NO LONGER A SOLUTION FOR DISPOSAL The U.S. Department of Defense and a growing number of states have recently banned incineration of PFAS waste. Studies showed that incineration generates short chain PFAS while landfills produce PFAS leachate.

A Sustainable and Cost-Effective Alternative

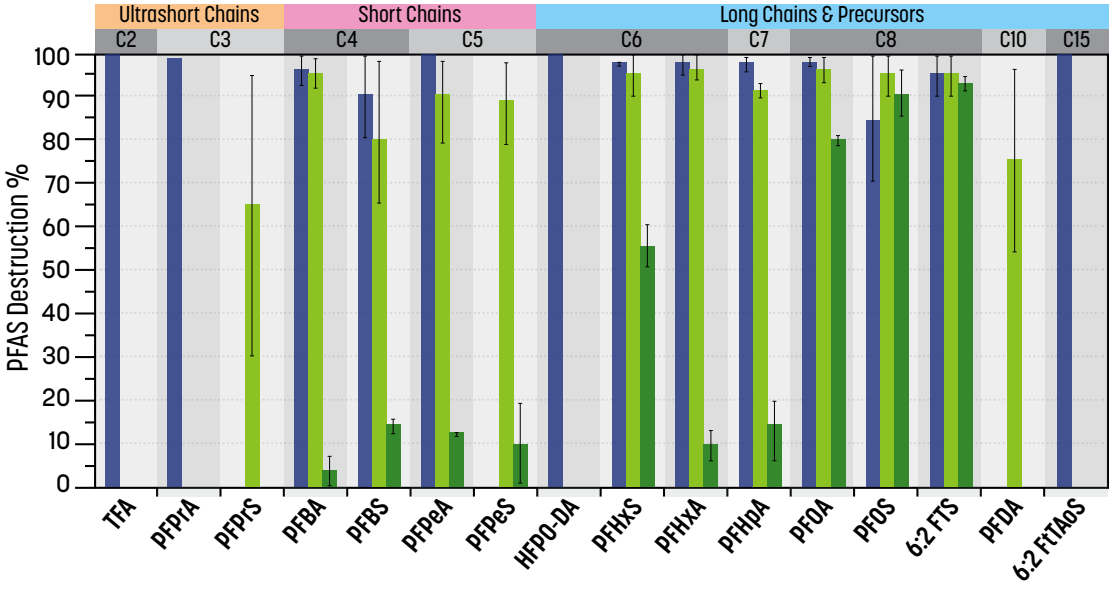
The Elemental™ photochemical system achieves **over 99% destruction of all PFAS compounds, including ultrashort chains (C1-C3) within 1-3 hours**. In addition, energy use and cost studies show the Elemental solution to be the most efficient process available.

Figure 1: Histogram showing the PFAS destruction performance of different technologies. The standard deviation bars reflect the variations obtained with different water samples and sources. Data aggregated from peer-reviewed literature and industry reports.

Photochemical (Source: Claros Technologies, 2022)

Hydrothermal (Source: https://doi.org/10.1021/acs.est.2c00654, 2022)

Electrochemical (Source: https://doi.org/10.1016/j.ceja.2021.100216, 2022)



A CASE STUDY: FIREFIGHTING FOAM

The Problem with AFFF

The use of aqueous film-forming foam (AFFF) has caused growing concerns related to its impact on water and ecological resources, due to PFAS pollution. **AFFF contains very high PFAS concentrations**, and rising litigation against AFFF manufacturers and users is driving an urgent need for technologies to permanently and cost-effectively treat AFFF waste.

Table 1: Results obtained from the treatment of AFFF wastewater from a military site resulted in over 99% destruction of all PFAS compounds, including fluorotelomers and precursors (C8-C15), in two hours.

PFAS Compound	Initial Concentration	Final Concentration	Percent Destroyed
6:2 FtTAoS	~3000 ppb	N/D	>99.9%
6:2 FTS	592 ppb	2.5 ppb	99.6%
PFBA	195.7 ppb	2.3 ppb	>99.9%
PFPeA	78 ppb	0.6 ppb	99.2%
PFHxA	98.9 ppb	2.9 ppb	97.1%

A CASE STUDY: DESTRUCTION OF INDUSTRIAL PFAS CONCENTRATE

Helping Industries manage the PFAS in their wastewater is a first step in reducing the PFAS that get into rivers, watersheds and the environment.

Table 2: Results obtained from industrial PFAS Concentrate produced by ion exchange resins. Result show >99% destruction of the identified PFAS compounds.

PFAS Compound	Initial Concentration	Final Concentration	Percent Destroyed
TFA	18.7 ppb	0.01 ppm	>99.9%
TFPrA	12.1 ppb	0.08 ppm	99.3%
PFBA	72.9 ppb	0.04 ppm	99.95%
PFBS	1.1 ppb	<0.0002 ppm	>99.99%
PFPeA	4.3 ppb	0.0008 ppm	99.98%
HFPO-DA	1.3 ppb	<0.0002 ppm	>99.99%

Let's Work Together

Contact us and we would be excited to test and demonstrate our technology with your wastewater or PFAS concentrate at no cost. All we need is 5 Liters or less of your media, and you will receive a detailed and confidential scientific report of the test.

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