

# KDF media (or Kinetic Degradation Fluxion Media)

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Is a [chemical compound](#) used in water filtration applications. KDF is often used along side [activated carbon](#) to maximize the filters efficiency. Generally KDF is used in a [purification system](#) as a pre-filter, before another, finer stage of filtration, for example, [reverse osmosis](#), [deionization](#) and [ion exchange](#) systems.

## History

KDF is regarded as being one of the newer developments in [water treatment](#) and filtration, since its development in 1984, it has grown to be widely regarded as one of the best filtration medias available.

KDF was invented by Don Heskett in 1984. He initially discovered the potential of KDF media when he dipped one of his [brass](#) pen refills into a glass of [chlorinated water](#) containing chlorine [agent](#) tablets (hence colored pink), and observed the color dissipate. It was at this moment that Don realized that the brass pen refill had some form of potential to absorb impurities from water, in this case, [chlorine](#). Over the next 36 months (3 years) Heskett developed and researched his discovery, slowly refining it until he came to the product now known as KDF media.

## Structure

KDF water filtration media is a high-purity [alloy](#) of both [copper](#) and [zinc](#), used in a flaked or granulated particulate form. Usually appearing gold or brass in color.

## Effectiveness

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KDF is known to kill [algae](#) and [fungi](#), control [bacteria](#) growth, remove chlorine, [pesticides](#), organic matter, [rust](#), unpleasant taste and odor, [hydrogen sulfide](#), [iron](#), [lead](#), [nickel](#), [chromium](#), [cadmium](#), [calcium](#), [aluminium](#), [mercury](#), [arsenic](#), and other organic compounds.

KDF has a wide spread of effectiveness against a large number of impurities in water. KDF is optimized when used in conjunction with another filter media, Especially any form of Activated carbon (whether in block or granulated form).

## Reactive process

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KDF water filtration media utilize the principle of electrochemical [oxidation](#) reduction, more commonly known to the population as the redox process (Redox reaction) to eliminate a vast number of water [contaminants](#).

## The Redox Process and KDF Media

All items are recognized as having some form of electrical and magnetic charge. some are positively charged and some are negatively charged, depending on their [molecular structure](#) and circumstances. The reason the Redox reaction works so well with KDF is because the two constituents of KDF are oppositely charged, copper is a positive element, and zinc is a negative element. So basically, Positively charged molecules (impurities and contaminants) are attracted to the negative charge of the zinc and negatively charged molecules (impurities and contaminants) are attracted to the positive charge of the copper.

## Water filtration process

Water passes through a bed of pure KDF or an Activated carbon/KDF mix. As the water makes contact with the KDF particles the Redox reaction takes place, removing such impurities as minerals, metals, dissolved oxygen and organic materials. The KDF itself creates a miniature [electrolytic cell](#) within the spaces between each particle, the zinc acting as the [anode](#) and the copper acting as the [cathode](#) within this cell, and the water and its impurities acting as the electrolyte through which the charge flows. When the contaminants and impurities found in water pass through this electrolytic cell, some substances, especially metals, react to the [magnetic force](#) exerted by the electrolytic cell and are attracted to the surface of the KDF particles, where they adhere. Other non-metal impurities react with the KDF and form zinc oxides, copper hydroxides, [hydroxides](#), and [sulfates](#) in the water. These by-products remain within the drinking water, but are not dangerous, also as part of this reaction, [ozone](#) is created and carried through into the drinking water, forming a hostile and desolate environment for algae, bacteria and any other array of micro-organism.