

Aeration of Liquids and Soils

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INTRODUCTION

Aeration is the process of circulating, mixing, or dissolving air in a liquid. In industrial water conditioning, one of the main goals of aeration is to remove carbon dioxide. Aeration is also used to oxidize soluble iron and manganese (found in many well waters) into insoluble precipitates. Aeration is usually used to reduce the carbon dioxide released during treatment. The role of the aeration system is to uniformly mix the water temperature from the top to the bottom of the pond and remove the thermocline. The function of aeration is to move the warmer water from the bottom to the top of the pond and keep the surface free of ice. This allows the pond to oxygenate. Aeration brings water and air into contact to remove dissolved gases and oxidize dissolved metals, including iron, hydrogen sulfide, and Volatile Organic Chemicals (VOCs).

AERATION OF LIQUIDS

The aeration of liquid (usually water) is achieved through a venturi, aeration turbine or compressed air through the liquid through the liquid. Ceramics are suitable for this purpose because they usually involve the dispersion of fine air or gas bubbles through porous ceramics in the liquid. The smaller the bubble, the more gas is exposed to the liquid, thereby improving the gas transmission efficiency. If necessary, diffusers or sprinklers can also be designed in the system to cause turbulence or mixing. The porous ceramic diffuser is manufactured by fusing alumina particles using porcelain bonding to form a strong, uniform porous and homogeneous structure. Natural hydrophilic materials are easily wetted, resulting in fine and uniform bubbles.

Uses of aeration of liquids

- Smooth (laminar) tap water flow at the tap.

- Production of carbonated water or cola for drinking.
- Secondary treatment of wastewater or industrial wastewater by using aeration mixer/diffuser.
- Increase the oxygen content of water used for raising animals, such as ornamental fish or fish farms
- Increase the oxygen content of wort (unfermented beer) or wort (unfermented wine), so that yeast can spread and start to ferment.
- Eliminate other dissolved gases such as carbon dioxide or chlorine.
- In chemistry, the oxidation of compounds dissolved or suspended in water.
- Come to induce, otherwise the water in the body is still mixed.
- Pond aeration.
- On the ground, ventilation refers to the expansion of air space.

AERATION OF SOIL

Soil aeration is the process of using mechanical or manual equipment to pierce the soil with nails (nail aeration) or remove approximately 1"x 2" soil core (core aeration) from the soil. When restoring the lawn, ventilation may be overlooked, but it is essential to restore it to health. Improve drainage and reduce puddles. Peak aeration involves the use of an aerator with nozzles up to a foot or longer. It is sometimes used to solve drainage problems in grassland areas. Core aeration in the turf area is used as a means to reduce turf compaction, reduce thatch accumulation, improve water/nutrient penetration, promote deeper root systems, and create an environment where turf seeds can directly contact the ground. There are many types of lawn aerators, including walking, riding and tractor-towing, as well as spikes.

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