
AHTF[®] - Advanced Heat Transfer Fluid Solutions

What is AHTF[®]?

AHTF[®] is a heat transfer fluid additive that increases thermal conductivity and therefore convective heat transfer. Simple statement, yes, but with very powerful implications!

To understand how AHTF works, remember that the fluid in any system or any piece of equipment is what moves the “energy” from its source (e.g. a boiler or a chiller) to where it is needed, such as an air handler, fin tube radiation, radiant panel or cooling tower. Suppose the fluid could carry more energy and move that energy faster? The result is a far more efficient system. Moreover, that improvement can and will result in increased system capacity. How can this be?

Heat transfer fluids all have published thermal properties. In other words how much heat (energy) they can transport. This includes pure water and mixtures of water with ethylene or propylene glycol. Engineers and equipment manufacturers all design around these properties. They know that if they are designing a 100-ton chiller using water they can expect 100 tons of capacity. They also know that if they are designing a system using a 40% mixture of ethylene glycol and water they can expect up to a 20% loss of capacity. This is not an opinion, it is a fact. Chemistry like gravity is not a suggestion, it's a law!

So, how did we change that equation? AHTF[®], an advanced heat transfer fluid additive that uses 21st Century nanotechnology. AHTF[®] additive is a **High-Performance Heat Transfer Fluid** additive that contains aluminum oxide nanoparticles dispersed in plain water with stable suspension. The base fluid can be plain water, or a mixture of water with ethylene glycol (EG) or propylene glycol (PG).

AHTF[®] will not agglomerate but will remain in suspension. It will not settle to the bottom of lengthy vertical HVAC piping as in the case of high rise building and geothermal applications, and it will not erode pipes or equipment. Microscopic nano-sized metal oxide particles are used to increase the thermal conductivity of the base fluid. These non-magnetic nanoparticles are about the size of human DNA and will not get trapped by the finest nor strongest of fluid and magnetic HVAC filters, and it is non-hazmat. Scientists at AHTF[®] Solutions engineered these particles specifically for heat transfer fluids.

The term "Nanoparticle" refers to solid particles with one of their dimensions smaller than 100 nanometers. AHTF[®] is manufactured by a controlled process (US and International patents pending). AHTF[®] is formulated for use in closed-loop hydronic systems where fluid operating temperatures range between -40° F and 250° F (-40°C to 121°C). However, the nanoparticles themselves used in AHTF[®] can withstand temperatures in excess of 1,200° F (649°C). Our R&D team is currently developing a product for high temperature fluids such as Therminoil, used in thermal solar applications.

The Thermal Conductivity, Specific Heat, Density and Viscosity of a fluid together determine its ability to transfer heat. AHTF[®] alters these properties to create a high-performance heat transfer fluid. ***AHTF[®] will outperform ANY heat transfer fluid additive currently on the market today!*** AHTF[®] has fluid properties for specific applications such as closed-loop hydronic heating and cooling systems, data room cooling, thermal storage, solar heating systems, radiant heat and various heat rejection applications. These properties increase the thermal energy efficiency of these systems.

The superior performance of AHTF[®] will reduce the approach temperature in all heat exchangers. These heat exchangers can be shell & tube, plate frame, dry cooler, water coil, chiller or condenser barrel or any form of exchanger where a temperature difference exists.