



PARATHERM NF[®] HEAT TRANSFER FLUIDS

For Perc Distillation Units in Dry-Cleaning Machines



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ADVANTAGES

Many dry-cleaning machines employ internal distillation units that are designed to regenerate spent “perc” dry cleaning fluid. The perc is continuously refreshed, with little — if any — lost to the atmosphere.

OPERATION

Similar in design to double boilers, these “stills” typically contain an inner and outer shell. Heat transfer fluid is placed in the annulus, between the inner and outer shells. Electric immersion heaters are located in the bottom of the annulus in the heat transfer fluid.

The immersion heaters heat the fluid, and the fluid in turn gently and uniformly warms the inner shell. Heat from the inner shell evenly brings the spent perc to its boiling temperature.

As the perc slowly boils, its vapors travel through the coils and are condensed back to liquid form, leaving dirt behind.

The rejuvenated perc can then be automatically pumped back into service.

HEATER FOULING

Conventional heat transfer fluids have been reported to completely foul the still’s electric immersion heaters with hard, baked-on carbon. This fouling is due to:

High heat flux — where the amount of heat produced at the surface of the heater is higher than the heat transfer fluid can handle without degrading, and...

Circulation — where convection currents move the heat transfer fluid too slowly past the heater’s surfaces (compared with forced circulation). In both cases, the fluid’s molecules wind up lingering too long in contact with the surfaces of the immersion heaters.

As the fluid’s skin temperature begins to rise, its smaller molecules begin to boil. And as skin temperatures rise further, chemical bonds start breaking.

As the molecules degrade, a sooty, varnishy form of carbon is produced. This sticky carbon immediately adheres to the heater and bakes on.

HEATER BURNOUT

The layer of carbon becomes thicker, insulating the heater from the surrounding fluid. The control unit, sensing that the fluid is cooling off, continues to provide electricity to the heater — less and less of which gets to the perc. The still’s efficiency decreases and less fresh perc is available.

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Not able to release its full heat into the fluid, the internals of the heater rods become hotter and hotter and eventually, the rods burn out.

PARATHERM NF® FLUID

Widely used in solvent distillation equipment, the Paratherm NF non-fouling, non-toxic fluid is highly efficient, cost effective and thermally stable.

Rated for service to 600°F, the crystal-clear NF fluid is non-fouling. It won't coat the unit's heaters with hard, baked-on carbon deposits when severely overheated — unlike conventional heat transfer fluids. This is particularly important with electrical immersion heaters used in non-forced-circulation perc stills.

TOXICITY/SAFE DISPOSAL

The odorless NF fluid is also completely non-toxic (it is food-grade). Easily disposed, the NF fluid can be gathered using the same simple



techniques for spills of light lube oils. It can be safely combined with used lube oils and sent to the local motor oil recycler — or burned for BTU value (EPA, citation 57FR21524).

Environmentally, the NF fluid has passed Bioassay with Rainbow trout, Gulf shrimp and freshwater shrimp.

Founded in 1988, Paratherm—Heat Transfer Fluids has become a leading U.S. manufacturer of specialized heat transfer fluids and system cleaners. The firm offers a wide range of heat transfer fluids (currently 8 fluids and 3 cleaners) covering temperatures from -137°F to +650°F. The company has a network of distributors and warehousing locations throughout North America and globally to offer regional service and quick delivery.

Questions? Please contact Ed Cass, Paratherm Technology Manager — Heat Transfer Fluids, 2009 Renaissance Blvd., King of Prussia, PA 19406 USA. 800-222-3611 or 610-941-4900, (Fax 610-941-9191), info@paratherm.com — www.paratherm.com.