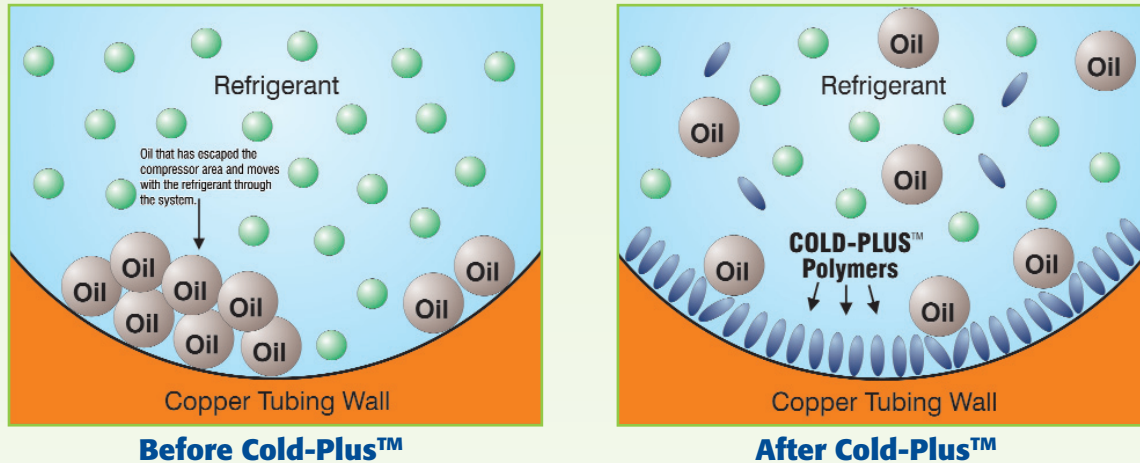


THE PROBLEM WITH “OIL FOULING”

OIL FOULING



Before Cold-Plus™

After Cold-Plus™

In virtually all Air Conditioning and Refrigeration Systems, 1% of the compressor’s lubricating oil escapes the compressor and circulates the system with the refrigerant. This oil attaches itself to the inner walls of the refrigerant’s copper tubing; causing a negative effect as an insulator to heat exchange. Contaminating oil films are deposited throughout the system and it is these oil deposits that ultimately degrade the heat transfer; reducing efficiency as reported by ASHRAE. Since oil inevitably leave the compressor with the discharge gas, systems using halocarbon refrigerants must return this oil at the same rate in which it leaves (1986 ASHRAE Handbook, Refrigeration, Chap 3.6).

ASHRAE states that unless oil is removed periodically or continuously from the point where it collects, it can cover the heat transfer surface in the evaporator, reducing performance (1986 ASHRAE Handbook, Refrigeration, Chap 4.4).

As the oil and refrigerant mix, the chemical composition of both is drastically altered. The pressure and temperature characteristics, of the refrigerant/oil mixture, will be different from the desired pure refrigerant. The viscosity of the oil is reduced by dilution with the refrigerant; increasing the probability of poor lubrication in the compressor.

The end result of this oil contamination can most frequently occur in the expansion valve, culminating in restricted or sticky expansion valves. A few milligrams of these contaminants can render a system completely inoperative (1998 ASHRAE Handbook, Refrigeration, Chap 6.7). The aforementioned 1% of the lubricating oil sounds minimal, but since a capillary tube or expansion valve can be fouled with just a few milligrams of oil, we find that when 1% of any oil charge is flowing constantly through the system, as it does, the system will become “Oil-Fouled”. This migrating oil, in any A/C or Refrigeration System, is very costly; increasing kilowatt consumption, financial expenditures on increased utility bills, as well as, repairs.

The extent of the “Oil Fouling” is as follows: within the first year of a new Refrigeration System, 7% efficiency will be lost, 5% lost the second year, and 2% lost per year in the following years. According to ASHRAE, the efficiency degradation will peak somewhere between 20% - 30%.

HVAC technicians (Heating, Ventilation, and Air Conditioning) have been, for the most part, unable to deal with this phenomenon; exacerbating with time, even when a new A/C compressor and evaporator has been installed to replace the old one. Cold-Plus™ not only eliminates “Oil Fouling”, it also prevents it from ever returning; saving you costly, future repairs, as well as, restoring the lost 20% - 30% heat transfer efficiency. Now you will find that the system gets cooler, faster (air vent temperature will improve by 3 to 4+ degrees due to the heat transfer improvement) and refrigerant flow will increase due to the absence of the “Oil Fouling”.