

Colour Change in Lubricants

Colour development in lubricants upon aging or heating is attributed to the transformation of antioxidant additives that have been formulated into the base oil in order to inhibit oxidation. Antioxidants are sacrificial additives designed to react and terminate oxygen-centered compounds that cause the oxidative degradation of lubricants. Oxidation is the reaction that “wears out” the oil and is a major reason it must be changed.

Antioxidants undergo a chemical reaction or transformation into a new chemical compound as they intercede to protect the base oil from oxidation. The resulting compounds have different light absorption characteristics and appear as different colours in the fluids. Simply stated, the white or yellow additives we put in the fluids turn orange and brown as they age in the compressor.

It is important to remember that colour change is **not** an indication of the condition of the fluid. The fluid may see a series of colour changes throughout its life, depending on operating temperatures.

Finally, the fluid may turn dark within a few hours of operation after changing the fluid. This is a result of the antioxidants performing their function on the old or oxidised fluid that is left behind, since not all the fluid can be drained completely.