



Copper Corrosion: an Oil Analysis Method for Turbine, Gearbox and Hydraulic Lubricants

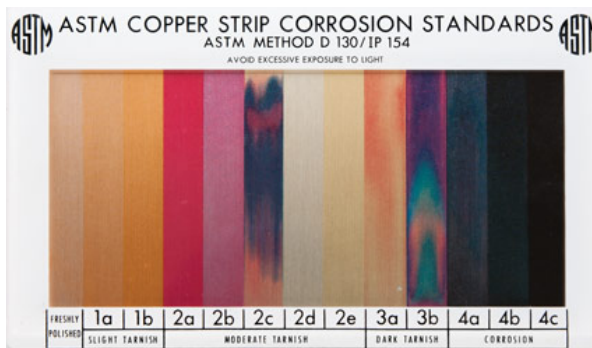
Method : ASTM D130

The copper strip corrosion test is designed to assess the relative degree of corrosivity of a petroleum product due to active sulfur compounds.

The Copper Corrosion test is a widely used oil analysis method for gearbox, turbine and hydraulic lubricants. This oil analysis method will detect the corrosive effects of a lubricant on copper alloys, but it is ineffective on iron or ferrous alloy parts and components.

The copper corrosion oil analysis method, ASTM D130, is relatively simple. A polished copper strip is immersed in 30mL of sample at elevated temperature, 50 °C or 100° C, depending on the type of gasoline, grease or oil tested, for a period of three hours.

At the end of this period, the copper strip is cleaned and examined for evidence of degradation. Results are rated by comparing the stains on the copper strip to the ASTM color-match scale from 1A to 4C.



The rating of 1A is given for appearance of freshly polished copper coupons with slight discoloration, but barely noticeable; 1B indicates slight tarnish, and the ratings proceed further down the scale as corrosion staining of the test coupon increases, with 4C being the worst, typically appearing as severely corroded, blackened, and pitted coupon.

ASTM Method D130 covers the determination of the corrosiveness to copper of aviation gasoline, aviation turbine fuel, automotive gasoline, cleaners (Stoddard) solvents, kerosene, diesel fuel, distillate fuel oil, lubricating oil, and natural gasoline or other hydrocarbons having a vapor pressure no greater than 124 kPa (18 psi) at 37.8°C.