

(TAN) Total Acid Number

Total Acid Number is an analytical test to determine the deterioration of lubricants. The more acidic a lubricant is, the further its degradation has proceeded. As oils or hydraulic fluids breakdown, they generally form acidic by-products that can be corrosive to metal components, accelerate wear, form deposits and increase viscosity. As a fluid degrades, the levels of corrosive acids increase along with the danger of component failure. Oxidation as measured by IR spectroscopy correlates well with TAN.



Some fluids are already acidic in their formulation; therefore, the most effective means to measure for acidity is in its change compared to a new fluid or to the previous sample. Wet chemical titration techniques can be used to accurately determine TAN; however, simpler, and less expensive, tests such as infrared spectroscopy with the [Spectro FTIR](#) or [FluidScan](#) are usually applied to measure oxidation by modern laboratories because it eliminates the need for a complex chemical analysis

The TAN values of used oil are an indication of the condition of that oil and are used (amongst other test results) to indicate an oil's condition and when making decisions as to re-use or replace the oil.

The most common cause of a rise in the TAN of Hydraulic oil is from the presence of water in the oil, water causes oxidation and the anti-oxidant additive to eventually deplete in the oil causing the TAN value to rise, the oil becomes oxidised.

Whilst there are no "fixed" limits it is generally accepted (adopted) that once a Hydraulic oil's TAN value rises to twice the original TAN value of new oil, the oil should be changed out, as there are no simple ways of reducing TAN in used oil, the oil becomes waste.

Ashless Hydraulic oils when new generally have a higher TAN of around 1.2 whilst Zinc based products are around .5 or .6, but we have found from testing that the Ashless product TAN actually drops in value whilst being used but then increases when the anti-oxidant additive is depleted, whilst the Zinc based product only increases when the additive is being depleted.

For this reason it is vital to know the oil type (Ashless or Zinc) and the TAN when new because without this knowledge it is not possible to judge the used oil's condition from TAN.

Hydraulic service providers and end users should treat TAN testing seriously when making recommendations and or decisions, most oil Labs can test and report on TAN but this can take days, whilst portable "on site" test kits are available and will give reliable results in minutes.

Those considering oil restoration should insist on a TAN test before making any decision.