

**Method compliance: ASTM D2624**

**What is the electrical conductivity?**

Conductivity is a significant parameter for safe and economic handling of fuels that can generate dangerous static charge so it is important to monitor it throughout the distribution line.

Aviation fuels are highly refined with very low conductivity and therefore have the potential to accumulate a very high static electrical charge which can lead to sparking and ignition of explosive vapours. Typically such fuels are pumped at velocity through distribution lines and filters causing the potential for an electrical discharge, the strength of charge being dependent on the conductivity of the fuel and the pumping velocity. In addition, conductivity is strongly temperature -dependant - the lower the temperature the higher the probability for retained charge in a fuel.

**Scope**

- These test methods cover the determination of the electrical conductivity of aviation and distillate fuels with and without a static dissipator additive. The test methods normally give a measurement of the conductivity when the fuel is uncharged, that is, electrically at rest (known as the rest conductivity).
- Two test methods are available for field tests of fuel conductivity. These are: (a) portable meters for the direct measurement in tanks or the field or laboratory measurement of fuel samples, and (b) in-line meters for the continuous measurement of fuel conductivities in a fuel distribution system. In using either type of instrument, care must be taken in allowing the relaxation of residual electrical charges before measurement and in preventing fuel contamination. For specification purposes, conductivity measurements should be made with the portable meters.
- The values stated in SI units are to be regarded as the standard.

**Significance and Use**

- The ability of a fuel to dissipate charge that has been generated during pumping and faltering operations is controlled by its electrical conductivity, which depends upon its content of ion species. If the conductivity is sufficiently high, charges dissipate fast enough to prevent their accumulation and dangerously high potentials in a receiving tank are avoided.

**Equipment specification**

Range: 0-1999 pS/m  
Resolution: 1 ps/m  
Accuracy: 2% of reading ± 1 pS/m Over-Range  
Indicator: "1" on left side of display  
Calibration: Internal source, filed adj  
Controls: 2 Pushbuttons, "M" (measure) & "C"  
Display: Liquid crystal, 3 ½ digits, ½ inch (27 cm) high  
Safety Ground: Banana jack on electr. assay  
Power: Battery, 3 eac. 6 volt alkaline  
Op temperature range: 32 °C to 165 °C  
Carrying Case: Hard, solvent resistant, molded plastic

