The [Megger test](http://newzealand.rs-online.com/web/c/test-measurement/portable-appliance-testers-accessories/) is a method of testing making use of an insulation

resistance meter that will help to verify the condition of electrical insulation. This is certainly not a new test, and has been in use for a number of years. One of the reasons that it is still such a popular option is because it is nondestructive. The test does have a limit of between 500 and 1000 volts, so it may not always be able to detect some insulation punctures. It will usually show the amount of moisture, the leakage current no the moist or dirty areas of the insulation, and winding faults and deterioration.

The best way to make sure that you have the right information and readings is to make sure that you are using the right [test equipment](http://newzealand.rs-online.com/web/c/test-measurement/portable-appliance-testers-accessories/portable-appliance-tester-accessories/). Fortunately, quite a bit of high quality equipment is on the market today.

The insulation resistance (IR) test (also commonly known as a Megger) is a spot insulation test which uses an applied DC voltage (typically either 250Vdc, 500Vdc or 1,000Vdc for low voltage equipment <600V and 2,500Vdc and 5,000Vdc for high voltage equipment) to measure insulation resistance in either kΩ, MΩ or GΩ. The measured resistance is intended to indicate the condition of the insulation or dieletric between two conductive parts, where the higher the resistance, the better the condition of the insulation. Ideally, the insulation resistance would be infinite, but as no insulators are perfect, leakage currents through the dielectric will ensure that a finite (though high) resistance value is measured.

Because IR testers are portable, the IR test is often used in the field as the final check of equipment insulation and also to confirm the reliability of the circuit and that there are no leakage currents from unintended faults in the wiring (e.g. a shorted connection would be obvious from the test results).

One of the advantages of the IR test is its non-destructive nature. DC voltages do not cause harmful and/or cumulative effects on insulation materials and provided the voltage is below the breakdown voltage of the insulation, does not deteriorate the insulation. IR test voltages are all well within the safe test voltage for most (if not all) insulation material

Test lamp

A **test light**, **test lamp**, **voltage tester**, or **mains tester** is a very simple piece of [electronic test equipment](http://en.wikipedia.org/wiki/Electronic_test_equipment) used to determine the presence or absence of an [electric](http://en.wikipedia.org/wiki/Electricity) [voltage](http://en.wikipedia.org/wiki/Voltage) in a piece of equipment under test.

**Two-contact test lights**

A voltage tester with three lamps to give an approximate indication of voltage magnitude

The test light is an electric lamp connected with one or two [insulated](http://en.wikipedia.org/wiki/Electrical_insulation) [wire](http://en.wikipedia.org/wiki/Wire) leads.[[1]](http://en.wikipedia.org/wiki/Test_light#cite_note-Suummers87-1) Often, it takes the form of a [screwdriver](http://en.wikipedia.org/wiki/Screwdriver) with the lamp connected between the tip of the screwdriver and a single lead that projects out the back of the screwdriver. By connecting the flying lead to an earth (ground) reference and touching the screwdriver tip to various points in the circuit, the presence or absence of voltage at each point can be determined, allowing simple faults to be detected and traced to their root cause. For higher voltages, a **statiscope** consisting of a neon [glow tube](http://en.wikipedia.org/wiki/Gas-filled_tube) mounted on a long insulating handle can be used to detect AC voltages of 2000 volts or more.

For low voltage work (for example, in [automobiles](http://en.wikipedia.org/wiki/Automobile)), the lamp used is usually a small, low-voltage [incandescent light bulb](http://en.wikipedia.org/wiki/Incandescent_light_bulb). These lamps usually are designed to operate on approximately 12 V; application of an automotive test lamp on mains voltage will destroy the lamp and may cause a short-circuit fault in the tester.

For [line voltage](http://en.wikipedia.org/wiki/Mains_electricity) (mains) work, the lamp is usually a small [neon lamp](http://en.wikipedia.org/wiki/Neon_lamp) connected in series with an appropriate [ballast](http://en.wikipedia.org/wiki/Ballast_%28electrical%29) resistor. These lamps often can operate across a wide range of voltages from 90V up to several hundred volts. In some cases, several separate lamps are used with resistive [voltage dividers](http://en.wikipedia.org/wiki/Voltage_divider) arranged to allow additional lamps to strike as the applied voltage rises higher. The lamps are mounted in order from lowest voltage to highest, this minimal [bar graph](http://en.wikipedia.org/wiki/Bar_graph) providing a crude indication of voltage.

Incandescent bulbs may also be used in some electronic equipment repair, and a trained technician can usually tell the approximate voltage by using the brightness as a crude indicator.