INSULATION RESISTANCE: WHAT IT PROVES, AND AT WHAT VOLTAGE

500 VOLTS OR 250?

What an insulation resistance test confirms is simple: that the conductors are **not touching anywhere inside that cable** — that they run the whole way separate from each other. The test is applied **across the load**.

TEST VOLTAGE	WHERE
500 V d.c.	All installations and circuits rated up to 500 V, **except** SELV and PELV
250 V d.c.	SELV and PELV circuitry — and anywhere sensitive electronics cannot be disconnected

A shaver socket is the example you will meet most in domestic work — and it is **not SELV**. Its isolating transformer gives **electrical separation**. The **supply side**, coming in at 230 V, is tested at **500 V**, and so is the separation itself: **Guidance Note 3** · 2.6.9 · Table 2.15 · p.75 gives **500 V d.c.**, minimum **1.0 MΩ**. You do not drop to 250 V for it.

✋ **The 250 V list — sensitive equipment you cannot disconnect.** Neon switches, **USB socket outlets**, SPDs, AFDDs, RCDs and RCBOs. If you cannot take them out of circuit, you test at 250 V, between the live conductors joined together and earth.

USB sockets catch people.

A socket with USB connections needs the 250 V test **even with no LED on it** — there are electronics behind the USB and they are permanently live. The USB does not switch off when you press the switch.

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