

Seven Steps to a Good Spark Test

A proper spark test at each critical point in the wire manufacturing process can greatly reduce scrap and improve profitability. Here are seven steps to insure you are finding the defects in your product:

1. Use the correct spark tester and electrode.

Clinton offers several types of spark testers and a wide range of electrodes, each designed for a particular product type. For instance, round wire tested to a UL spec must use a bead chain electrode; brushes are UL-approved for flat or irregularly-shaped product only.



UL specs also state that faults must be detected at least every 24", so a wire line running faster than 3000 FPM requires a spark tester with fast fault resolution capabilities and a longer bead chain electrode.

2. Ground your product. DC testing requires grounding for a proper spark test; and while high frequency testing theoretically works under optimum conditions without grounding the conductor, most test standards, including UL, mandate product grounding for reasons of operator safety.

3. Make sure your test product is dry. Water on the wire can cause false counting, cause printers and other devices to malfunction, and even damage your spark tester. High quality air wipes and other wiping devices are available from Clinton.



4. Test at the right voltage for your product. See your test standard for the correct setting. If you are using a high frequency spark tester and do not know the correct test potential, you can find it with a simple experiment, which establishes the lower limit (where ionization or corona begins to occur in the electrode) and the upper limit (where the insulation fails). The right test voltage will be somewhere between these limits. Please ask for the Clinton paper, "Selection of 3kHz spark testing potentials for insulated wire," for more information on this process.

5. Maintain your electrode regularly. Replace beads or brushes that are dirty or worn. Wire bouncing around between bent, filthy brushes or through a hole in your bead chain electrode is not being tested properly, since a much greater test potential is needed to bridge a large air gap. Electrode mounting plates with evidence of tracking should also be replaced.



6. Stabilize your wire as it runs through the electrode. Some products, especially smaller wire running at very high speeds, are prone to an almost invisible lateral vibration that can cause false counting. A series of wire guides positioned before and after the electrode can reduce or eliminate problematic vibration.

7. Calibrate your spark tester on a regular basis.

Since industry standards require that the calibration equipment be five times more accurate than the equipment to be calibrated, the new Clinton STCAL is recommended for voltage calibration. High frequency spark testers such as the HF-20E and HF-15A cannot be calibrated with high voltage probes.

