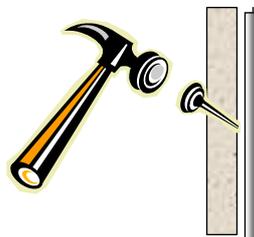




BS8436 Nail Penetration Test

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Why have a nail penetration test ?

In a phrase.....Personal Safety

The test is designed to determine the suitability of a cables protective screen as a current carrying component should there be a breach of insulation on the live conductor by a nail or similar metallic fixing.

In the event of a breach, a sufficiently robust screen in contact with the CPC will carry fault current long enough for a protective device (i.e. MCB) to operate. Furthermore, if the cable is properly designed, the nail or other penetrating object will not become “live” but will remain at near zero voltage.

AEI's Protec cable is specifically designed and manufactured to pass the nail penetration test. In fact it exceeds the BS8436 standard and can be used in thin wall partitions, ceilings, floors, and other environments where the potential for damage is greatest.

How is the test performed ?

The cable test is performed on a specially designed test fixture and is carried out under controlled conditions. The test procedure can be summed up as follows:

- A 500mm length of cable is prepared with all insulated conductors connected in parallel to a 230VAC source (all insulated conductors are live to increase the chance of the test nail hitting a live conductor). The CPC is connected to circuit neutral. The foil screen is not terminated but is at neutral potential by virtue of its contact with the CPC.
- Through a fixing device, a 1.6mm steel nail is driven by a 900 gram hammer that falls from a height of 400mm.
- On impact the nail will breach the sheath, screen, and the insulation of one or more live conductors. A circuit path will be created from the live conductor, through the nail, the screen, the CPC and to earth thereby forming a short circuit and high current. The test system is designed to hold this short circuit condition for a period of at least 1 second until the circuit overprotection device trips.
- On completion the cable is examined to determine whether or not the nail was in contact directly with the CPC. If so, the test must be repeated as it would not be a fair evaluation of the screen's current carrying ability if the CPC had been in contact with the nail.
- Throughout the test, the penetrating nail is measured for voltage potential. If this voltage potential remains below a safe 25 volts throughout the test than the cable is a Pass.