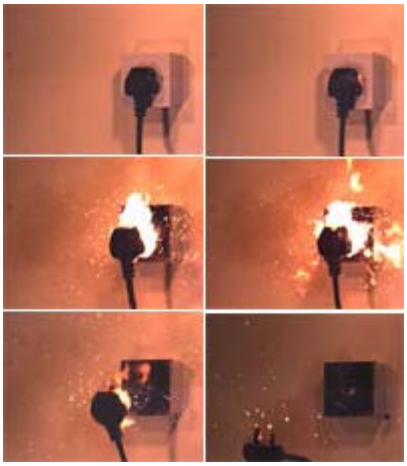
Case study on the conformance and performance of electrical protection devices

Shock horror!

The ability of a fuse to clear any short circuit faults which may occur is taken for granted by users, however, recently a batch of fuses dramatically failed safety tests carried out by ERA.

These fuses, used in non-rewireable plugs on products imported into the UK, have turned out to be counterfeit. ERA performs tests on behalf of ASTA Certification Services, the Certification Body, to protect consumers from these hazards.

Fuses, used for protecting electrical apparatus against the effects of excess current, consist of a piece of fusible metal connected in the circuit to be protected, which melts and interrupts the circuit when an excess current flows. BS 1362 fuses contain sand filler to absorb the energy released when the fuse element ruptures.



Standard 3 pin plugs must be fitted with a fuse link conforming to BS 1362. ASTA Certification Services provides assurance that fuses meet the applicable regulations.

To obtain certification, fuses have to meet the safety requirements for a breaking capacity current of 6kA. A fuse complying with BS 1362 would clear this short circuit current safely without any detrimental effects. In this case, the fuse could not contain the arc caused by the short circuit leading to a powerful explosion. In split seconds, the cap of the fuse blew, forcing the fuse carrier away from the base of the plug causing the plug to be ejected from the socket. It turned out the wire element and cap had been incorrectly constructed and amazingly the fuses did not contain any filler.

It's frightening that these fuses could have found their way into people's homes. A person could have received a violent shock and severe burning and maybe even blindness caused by the explosion and flying debris. It's also likely the product would have caught fire", says Dave Treagus, Project Manager.

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