

“KEEPING PACE” - #38

(Page 1)



ABSOLUTE TOTALS:

The photograph above shows the paint still remaining on the outside wall of a warehouse in Allen, Kentucky, after the interior was totaled by fire. Surprisingly enough, this concrete block outside wall was a very good insulator against the 2000°F plus temperatures inside. The photograph on the next page shows the interior of this same warehouse. It may be observed that the interior combustible materials have been absolutely, totally consumed. For sixteen years I have termed such fires “absolute totals.” Some people refer to these as “ashes and nails.” They are not infrequent, especially in areas where it takes the fire department a long time to respond. In such fires, only metallic and ceramic materials remain after the fire, with an occasional piece of wood lying here and there among the ashes. Thus, there are no significant burn patterns. Without any burn patterns, it is almost always impossible to determine the general area of origin of the fire, let alone the point of origin, (unless there was an eye witness to it or a security camera). Moreover, all the inner parts of the equipment inside the building are also always consumed, so no testing or analysis of any equipment is possible. More importantly, anywhere one looks in an absolute total fire, one may find melted copper on the wiring. With the wiring being so greatly melted by the heat of the fire, and with no significant burn patterns, it is generally impossible to confirm or rule out a short circuit as the cause.

“KEEPING PACE” - #38

(Page 2)



30 AMPERE FUSES:

In this same fire, the owner was about \$100,000 underinsured. He had left the warehouse a few minutes prior to his employee discovering the fire burning in the second level and ceiling area. The only source of heating power in that area was electrical, so because of the eyewitness account I concluded that this was probably a short circuit fire (location unknown). More evidence of this was the 30 ampere fuses I found in the fuse panel. Short circuit arcing energy is proportional to the time duration of the arc, or in other words, how long it takes the fuse or circuit breaker to open (pop). Below are the opening or “popping” times which I have measured for fuses at the typical short circuit currents of 200 and 250 amperes:

OPENING TIMES IN SECONDS

	<u>200 AMPS</u>	<u>250 AMPS</u>
15 AMP PLUG FUSE:	.025	.012
20 AMP PLUG FUSE:	.063	.016
30 AMP PLUG FUSE:	.375	.080

At 200 amperes, a 30 ampere fuse allows 15 times more energy into the arc than a 15 ampere fuse does. This is really why 30 ampere fuses are more dangerous, and should not be used in place of 15 or 20 ampere fuses.

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