General Testing Considerations

The characteristic of a fuse can be verified by the corresponding functional tests. However, these tests may give wrong results if not performed properly. The followings are some factors which may affect the accuracy of the tests. Their effect may vary in different conditions and hence should be used for general reference only.

1. Current stability

A current fuse is decided to clear overload current within a specified time limit for safety protection purpose. Basically, the amplitude of the current passing through a fuse determines how fast the fuse will blow. So it is very important that the testing current is accurately adjusted to the required value and remains stable during the test. The stability of the testing current, unfortunately, is quite easily affected by the use of improper power supply or wrong setting.
During an overload test, the fuse under test will be heated up by the testing current. Its resistance will hence increase continuously until the fuse blows. If the power supply used for the test is not regulated to provide constant current output, the testing current may drop tremendously from the specified value. The blow time thus obtained will be wrong.

Recommendations
- use a regulated power supply which can maintain the testing current at the required value throughout the test.
- monitor the testing current to identity unacceptable current variation.

2. Ambient temperature

Variation of ambient temperature will affect the heat dissipation of a fuse. Lower ambient temperature helps to dissipate more heat and practically increases the current carrying capacity of the fuse being tested. Higher ambient temperature on the other hand will decrease the current carrying capacity.

Recommendations
- maintain the ambient temperature at 25+/-5 ºC.

3. Testing setup construction

The construction of a testing setup may also have significant effect on the heat dissipation of a fuse tested on it. Generally speaking, the thinner the current carrying cable is or the higher the contact resistance between the fuse and the contact terminal is, the poorer the heat dissipation will be. In some extreme cases, the very thin current carrying cable and high contact resistance may even generate heat during the test.

Recommendations
- refer to international standards where appropriate (e.g. UL198G/UL248-1 and IEC127-2) for proper testing setup construction.