

THIRD EDITION Intermediate Current Tests

As previously discussed, the Limited Current Abnormal Overvoltage Test, the Intermediate Current Test and Short Circuit Current Tests in Third Edition are done using an abnormal overvoltage and available fault current rather than a specific current value impressed through the device.

The Intermediate Current Test was initially introduced in the revision to UL 1449 Second Edition in February 2007. Since the inception of UL 1449 Second Edition, UL has conducted Abnormal Overvoltage Tests at both the low or limited current level and at the high current level (Short Circuit Current Test). There were some industry representatives, however, that believed there was a need to capture the SPD response at the intermediate current levels as well; thus, the introduction of the Intermediate Current Test. The concept is that by providing testing at the limited or low current levels, intermediate current levels and high current levels, we are providing a broad sweep of the SPD response.

The available fault current utilized in these tests varies based on SPD Type and the specific test being conducted. For the Intermediate Current Tests, the following applies:

Brief Test Description utilizing the parameters for a 120V circuit only for purposes of this discussion.

CURRENT TEST	SPD TYPE	TEST VOLTAGE	CURRENT
Intermediate Current Test	Type 1 SPD Type 2 SPD Type 4 used in a Type 1 or Type 2 application	240 V	1 kA, 500 A, 100 A
Intermediate Current Test	Type 3 & Type 4	240 V	150A, 50A
If pass criteria is met as per the standard, then Leakage Current or Grounding Continuity tests are performed based on SPD design.			

In all cases, the pass criteria for the Current Tests are as follows:

During and following the tests, the following conditions shall NOT result -

1. **Emission of flame, molten metal, glowing or flaming particles through any openings (preexisting or created as a result of the test) in the product,**
2. **Charring, glowing or flaming of the supporting surface, tissue paper or cheesecloth,**
3. **Ignition of the enclosure,**
4. **Creation of any openings in the enclosure that result in accessibility of live parts, when evaluated in accordance with the Accessibility of Live Parts Test in 58.2,**
5. **Loss of structural integrity to a degree that the equipment collapses or experiences such displacement of parts that there is a risk of short-circuiting or grounding of current-carrying.**

The overall purpose of these tests is to ensure that when an SPD is subjected to an abnormal overvoltage anomaly, regardless of whether the anomaly takes place with a low, Intermediate or high available fault current, the device responds appropriately and does not create a fire or shock hazard.