

USB KEY TENSILE STRENGTH TEST RESULTS CONDUCTED BY TRACE LABORATORIES FOR SAFENET, INC.

EXECUTIVE SUMMARY

METHOD

Testing was performed to determine the breaking strength of USB keys when installed in a fixture simulating typical computer orientation. A single point probe was positioned a measured distance from the connector end of the USB key. The probe was lowered until contact was established with the test specimen.



Test Apparatus

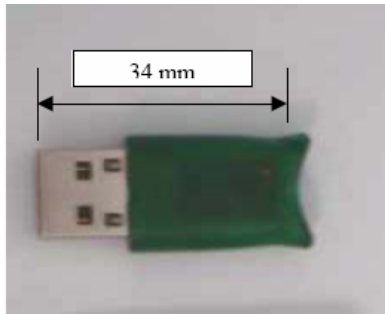


*Typical setup of a USB key in the fixture
with the probe positioned above the
specimen*

The probe was actuated to exert a force on the USB key at a cross head speed of 2 inches/minute. The maximum force was recorded at the point of breakage.

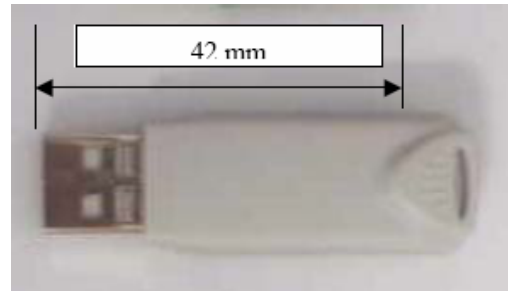
The test specimens were tested in two orientations. The USB keys were positioned with the seam of the metallic connector in the underside position or rotated 180 degrees so that the seam was on the top. Four specimens from each sample type were tested in each orientation.

TEST SPECIMEN



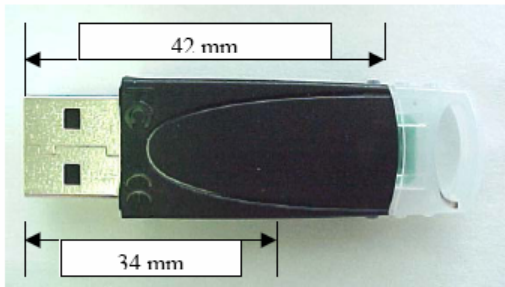
Aladdin HASP HL

Pressure point exerted at 34 mm from the end of the connector



Sense Elite 4

Pressure point exerted at 42 mm from the end of the connector



SafeNet Sentinel Hardware Key

Tested at two pressure point distances:
34 mm and 42 mm from the end of the connector

The SafeNet Sentinel Hardware Key was tested at two pressure point distances in order to create the most fair and realistic comparisons with the Aladdin HASP HL key. For the purposes of this test, the key serves as the lever used to apply pressure at the point where the metal connector is inserted into the USB port, or the fulcrum.

Shorter key, or lever, length results in relatively less force being directly applied to the metal connector. The *fairest* comparison between HASP and the Sentinel Hardware Key therefore is a comparison with the force applied at an identical lever length from the fulcrum: 34 mm. However, the most *realistic* test is to apply the force at the end of the Sentinel Key: 42mm. The end of the Sentinel Key is the point where force is most likely to be applied in a real use scenario.

RESULTS

The average results of four determinations per sample orientation are tabulated below.

USB Key	Pressure Point Distance from End of Connector, mm	Direction of Applied Force**	Force at Break, lbs.
Sense Elite 4	42	Down	11.8
Sense Elite 4	42	Up	11.5
Aladdin HASP HL	34	Down	10.7
Aladdin HASP HL	34	Up	7.2
SafeNet Sentinel Hardware Key	42	Down	23.0
SafeNet Sentinel Hardware Key	42	Up	17.5
SafeNet Sentinel Hardware Key	34	Down	39.2
SafeNet Sentinel Hardware Key	34	Up	29.2

** Applied force in the down direction is with the connector seam on the bottom. The up direction is with the connector seam on the top.

The results clearly show that the SafeNet Sentinel Hardware Key is the most impervious to breakage resulting from the application of force to the key. The total amount of force required to break the Sentinel Key ranges from 148% to 544% more force than any competitive key tested.

The complete results of this study can be viewed at www.safenet-inc.com/tensile

Trace Laboratories-East certifies that the test equipment used complies with the calibration test purposes of ISO 10012-1, ANSI/NCSL Z540-1-1994, and MIL-STD-45662A and that the data contained in this report is accurate within the tolerance limitation of this equipment.

The results in this report relate only to those items tested. If any additional information or clarification of this report is required, please contact Trace Laboratories-East. This test report shall not be reproduced without the written approval of Trace Laboratories-East.



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