MIL-STD-810G vs MIL-STD-810H - What's the Difference?

News

By Mike Wingham

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Rugged tablets, laptops and smartphones are often labelled as military standard, but it's difficult to know what it means.

What is MIL-STD?

MIL-STD is short for Military-Standard. The term is used by the United States' Department of Defence to achieve standardisation objectives.

The standards were established after WWII to ensure interoperability between the military and its secondary industries. The focus of the standards are on technical requirements, processes, practices, procedures and methods. The MIL-STD is now used by other industries as it provides an accurate guide as to how well equipment can withstand extreme conditions.

To be certified as MIL-STD, equipment must pass rigorous tests based on its ability to cope with environmental stress. The testing includes extreme temperature, moisture, dust and shock so that equipment can be labelled as heat-resistant, water and dust resistant and shock resistant. Devices that have been certified with MIL-STD will

always be able to handle much more than a standard consumer tablet, which is key to a device's lifespan when being used out in the field.

The MIL-STD-810G classification was issued in 2014. Five years later (in 2019), the MIL-STD-810H classification was issued as the latest update. The G and H don't stand for anything in particular - they are simply the seventh and eighth revisions of the classification.

Why Do Manufacturers Use MIL-STD Classification?

There are a number of benefits for testing equipment using the test methods listed in MIL-STD-810H.

Equipment Complies With Military Requirements

The United States military uses a wide range of equipment which must comply with MIL-STD-810 requirements if it is to be purchased by the Department of Defence.

Contractual Requirements

Some companies will only buy products that meet military standard requirements. A manufacturer may be required to show that the product has been tested in a lab to comply with the requirements of the contract.

Product Research and Development

The testing requirements help manufacturers with research and development of their products.

Recognised Standard

MIL-STD is considered to be the most stringent testing method used by a variety of industries. The standard is well-known and recognised by potential buyers.

Difference Between Military Standard Classifications

There are a number of changes that have been made between each release of a new MIL-STD classification - both major and minor.

One of the noticeable changes between MIL-STD-810G and its predecessor was 'Test Method 527', which used multiple vibration exciters to perform multi-axis shaking. The shaking simultaneously excites the test article to simulate vibrations in the real world. This test replaced the previous three distinct tests that involved shaking a load in the X axis, Y axis and Z axis.

MIL-STD-810G vs MIL-STD-810H

At more than 1,000 pages, MIL-STD-810H has 28 different test methods; most products don't have to be tested on all 28. Most tests are general, but others are very specific. Some of the most commonly used tests are for shock and vibration. The test simulates the effects of jolts and drops that can occur while being transported or used. High and low temperature testing are also common tests.

Changes in MIL-STD-810H (when compared to MIL-STD-810G) include:

- The definition of temperature shock.
- Test and Evaluation Master Plan (TEMP).
- Test conditions and tolerances for test conditions.
- Calibration interval guidelines.
- Temperature change rate.

MIL-STD-810-H tests include (but are not limited to):

- Low pressure testing, which assesses whether or not a system can still function in a low-pressure environment or withstand rapid changes in pressure.
- High temperature testing, which tests the effect of low temperatures on the integrity and performance of a material.
- Low temperature testing, which tests the effect of low temperatures on the integrity and performance of a material while in storage and use.
- Temperature shock - determines the ability of a material to cope with a change in temperature that is greater than 10C in one minute.
- Contamination by fluids testing, which examines the impact of temporary exposure to contaminated fluids.

Why Invest in Military Standard Devices?

Rugged devices are a must in the field and there are a number of reasons for that, especially in Australia. When a rugged device is certified as being tested to MIL-STD-810 standards, it is able to withstand environments that consumer products would not survive in. Many field workers in Australia are out in rural and regional areas, which means they face some of the harshest temperatures and humidities our climate has to offer.

Field workers are often outdoors and in close proximity to machinery. This means their devices need to be able to absorb hits taken from drops, shocks and vibrations. Rugged devices that are tested to MIL-STD-810 standards are not only able to withstand these events, but are also able to continue performing efficiently so that productivity remains strong throughout any given workday.

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