

Getac

ATEX TECHNOLOGY WHITE PAPER



Rugged Mobile Computing Solutions

www.getac.com

Getac

Rugged Mobile Computing Solutions

TECHNOLOGY BRIEF

Getac Intrinsically safe and Anti-explosive technology

WHAT IS ATEX ?



ATEX - The World's Highest Safety Standard in Explosive Environment

ATEX (deriving from ATmosphères EXplosibles) is the highest level of safety standard for all electrical or non-electrical equipment in potentially explosive atmospheres. Hazardous areas are classified into three zones based on how often the explosive atmosphere is caused by gases, vapors, mists or air dust mixtures.



* If omitted suitable for all gas groups.

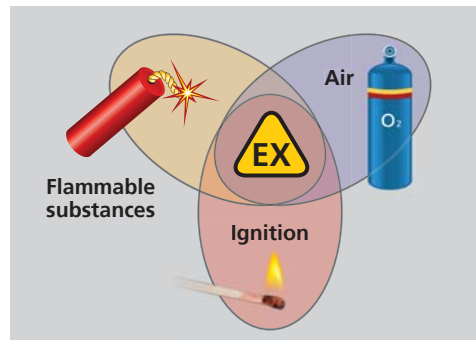
Getac Ultimate Solution for Intrinsic Safety in Flammable Hazards

To fulfill this distinctive requirement, the Getac ATEX-series, including convertible notebook, tablet and handheld, is uniquely designed to safeguard lives. Insulating mechanical material and exceptional circuit designs are applied to ensure the devices are ignition-proof. Extraordinary thermal design is specially customized for use in flammable environments. All Getac ATEX certified rugged mobile devices greatly benefit customers who need to use electrical equipment in Ex-area.

► Explosions occur in explosive atmospheres

The following three elements need to occur simultaneously in order to cause an explosion :

- Flammable and combustible substances (i.e. fuel/combustible dust)
- Comburents (ie. Oxygen, methane)
- Ignition source*



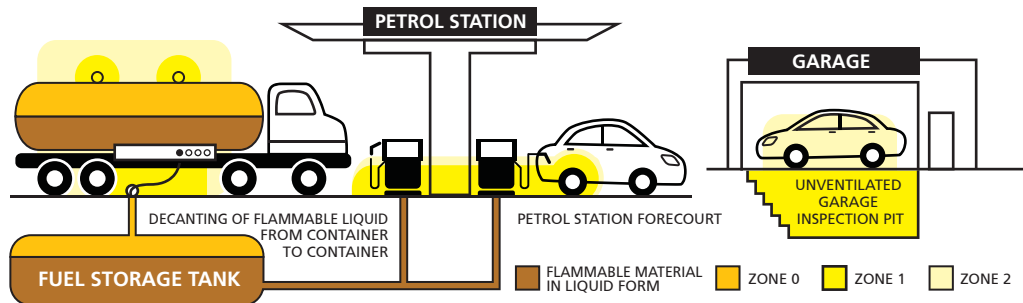
* ignition sources such as lightning strikes , open flames, mechanically generated impact sparks , mechanically generated friction sparks, electric sparks, high surface temperature electrostatic discharge , radiation , adiabatic compression.

► **Classification of Hazardous Places**

Zone	Description
Zone 0	A place in which an explosive atmosphere consisting of air mixed with flammable substances in the form of gas, vapor, or mist is present frequently, continuously, or for long periods. (>1000hrs/year)
Zone 1	A place in which an explosive atmosphere consisting of air mixed with flammable substances in the form of gas, vapor, or mist is likely to occur in normal operation occasionally. (>10 hrs/ and less than <1000 hours/year)
Zone 2	A place in which an explosive atmosphere consisting of air mixed with flammable substances in the form of gas, vapor, or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only. (less than 10 hrs/year)
Zone 20	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently. (<1000 hrs/year)
Zone 21	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation, but, if it does occur, will persist for a short period only. (<10 hrs and less than >1000 hrs/year)
Zone 22	An area in which a combustible dust cloud in air may occur briefly or during abnormal operation (less than 10 hrs/year)

EXAMPLE OF HAZARDOUS AREA ZONES

This diagram shows how hazardous area zones may occur in typical circumstances.



Ex Environment

ATEX Directive 94/9/EC defines Zone 2 as an area in which an explosive atmosphere (a mixture of air and flammable gases, steam or mist) is not to be expected under normal circumstances or just for a short period of time. It takes just one hazardous situation per year is enough to rate an area Zone 2. Zone 2 devices provide required ruggedness and fall protection, which ensures safety of use during normal operations without technical failures such as battery short.

An area must be classified Zone 1 if an explosive atmosphere can develop occasionally during normal operations. In that case only Zone 1 certified product must be used, which even in exceptional situations ensure necessary safety in case of failure.

ZONE 2

ZONE 1



GETAC COMPETITIVE ADVANTAGE

Designed to be rugged and anti-explosive from the ground up

Our application for ATEX focuses on intrinsic safety, so we need to design a product from the ground up using the principles of not igniting potential sources of ignition,

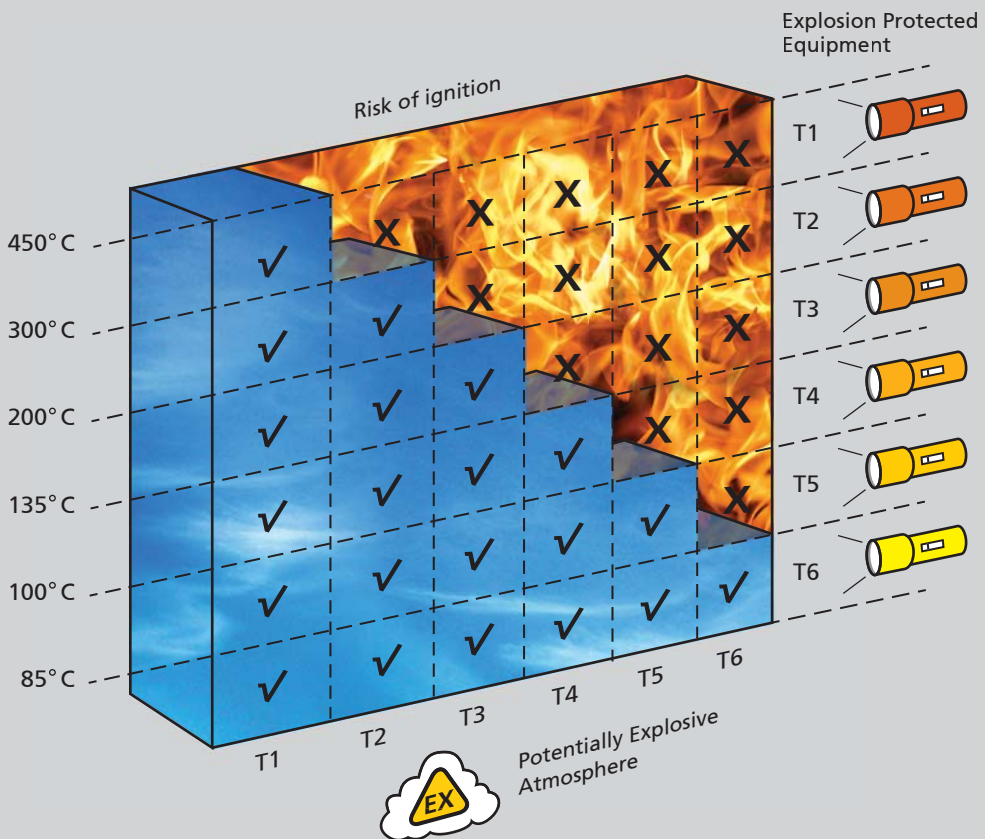
► Extraordinary thermal design for use in flammable environment

Thermal design: to avoid higher surface temperatures on enclosures, Getac ATEX certified devices are tested for T6 class which means the maximum surface temperature is as high as 85 °C

TEMPERATURE CLASS

Temperature class related to the hot surface ignition temperature of particular explosive atmosphere. It must not be exceeded by the temperature classification of the equipment intended to be used in that atmosphere.

Hot surfaces can ignite explosive atmospheres



► **Insulating mechanical material and exceptional circuit design to ensure the devices are ignition-proof**

From design point of view, the Getac engineering team overcomes the obstacles of designing a product to meet ATEX requirements. For metallic and non-metallic enclosure design, we have defined the best solutions to meet customers' expectations.

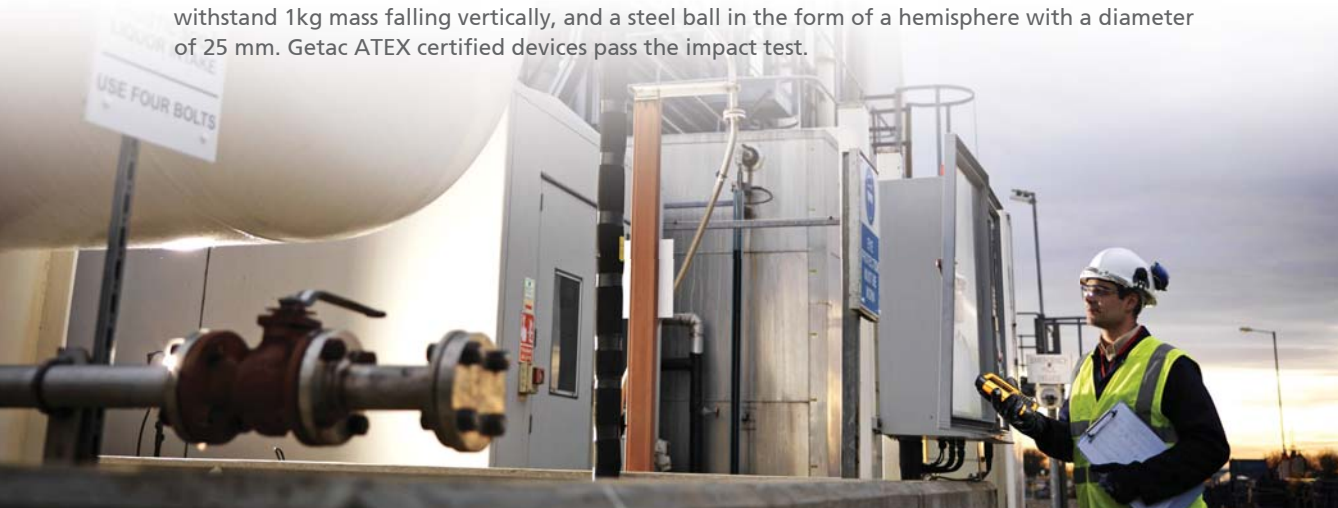
- **Metallic enclosure** (material composition and material strength) :
since metal causes energy storage, Getac's proprietary material composition and material strengthening can avoid the device causing sparks.
- **Non-metallic enclosure** (material selection, material strength and surface of enclosure) :
When the surface of the material is electrically charged, either negatively or positively, any contact with an uncharged conductive object or with an object having a substantially different charge may cause an electrical discharge of the built-up static electricity: a spark. Some of the sparks are harmless, but some sparks can ignite flammable vapors. Getac ATEX certified devices are designed to prevent static electricity, which means they can be used safely under hazardous environmental conditions.

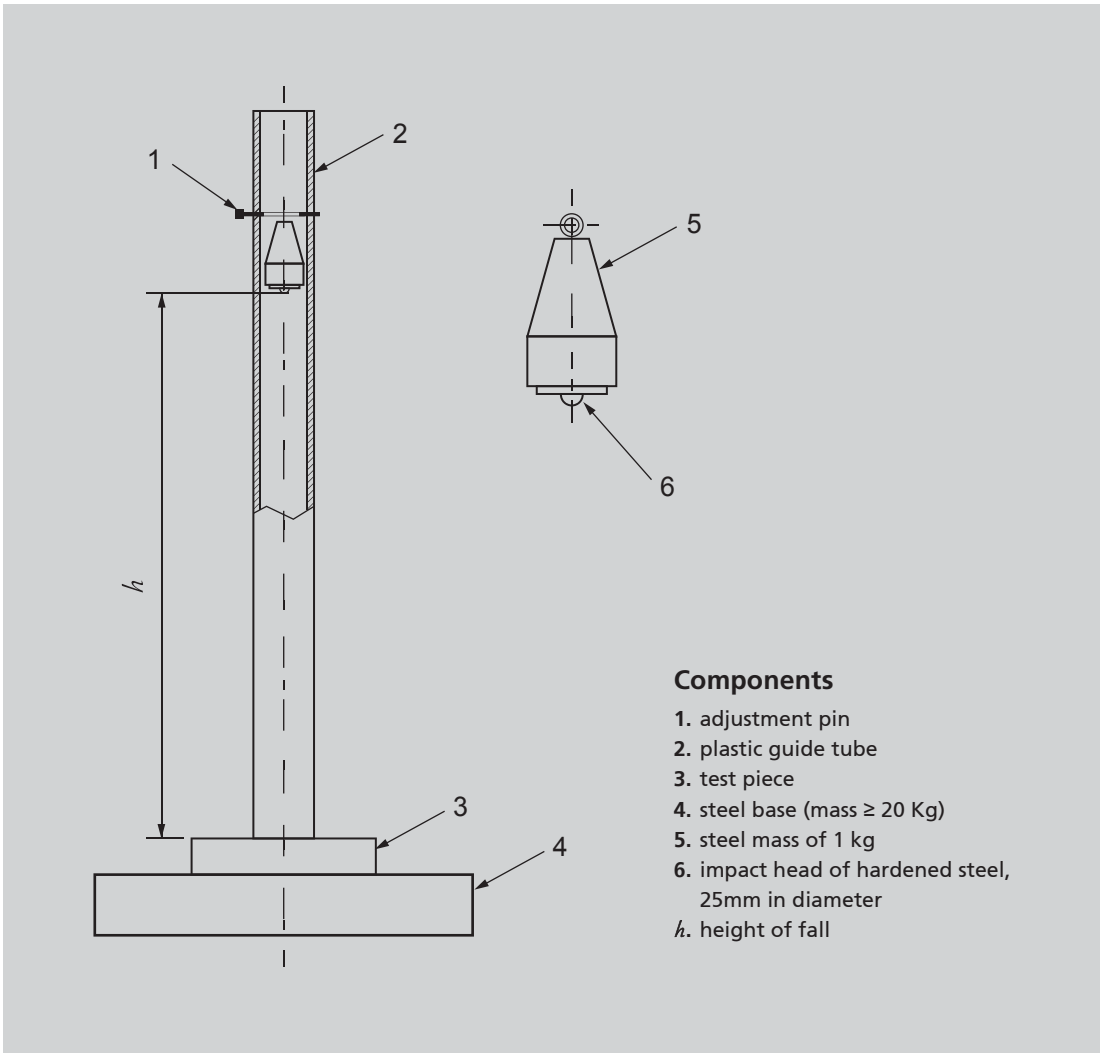
Through material selection, and material strengthening enhancements on the surface enclosure, Getac rugged devices are ready to be used in explosive environments.

► **stringent testing procedures on just ONE sample nonstop**

According to the testing Clause 26 criteria, up to 4 samples could be used for each of the tests. Getac only uses one device to complete all 4 tests, exceeding the testing standards.

- **Conditioning (temperature testing) :**
Conditioning (temperature testing): before conducting the ATEX testing procedures, the devices have to be frozen below -25°C for 24 hours and operate in temperatures up to $+65^{\circ}\text{C}$. This conditioning is lower than the testing requirements by -5°C and exceeds the high temperature test by 15°C .
- **Impact test :**
Getac tests our devices by doubling the standard testing requirement. Getac devices withstand 1kg mass falling vertically, and a steel ball in the form of a hemisphere with a diameter of 25 mm. Getac ATEX certified devices pass the impact test.





Components

1. adjustment pin
2. plastic guide tube
3. test piece
4. steel base (mass ≥ 20 Kg)
5. steel mass of 1 kg
6. impact head of hardened steel, 25mm in diameter
- h . height of fall

▪ Drop test :

the drop testing is not conducted on wood but on a much harder concrete surface. Each Getac ATEX certified device has to withstand these harsh testing requirements to ensure the safety of the users.

▪ Ingress Protection rating :

Getac ATEX certified products have been tested to meet a minimum rating of IP54, which is again above the requirement of ATEX certification.

Getac devices exceed the certification testing requirements.

APPLICATIONS

Inspection

Inspectors and researchers are exposed to potentially explosive atmosphere while working outdoors. Their daily work requires easy data collection from Getac's ATEX-series devices via WWAN, Bluetooth and WiFi, and checking the working status inside the Ex-area without danger. Furthermore, Getac's ATEX-series, equipped with the embedded GPS receiver and auto-focus pixels camera, also helps to record GIS information and images of the inspection point.



Emergency notification

Working in oil and chemical industries is highly dangerous, since a small accident might result in a great disaster. Data and voice transmission are essential to enable the field workers to make an emergency call to the control center at critical moments. Featuring 3.5G WWAN, Getac's PS336-Ex and Z710-Ex ensure real-time communication inside the Ex-area.



Maintenance

The MIL-STD-810G certified Getac ATEX-series has the most powerful computing capability available, which enables field inspectors to complete data analysis to understand the cause of defect. Moreover, featuring an expandable high-capacity memory storage, repairmen can install the maintenance manual on Getac's ATEX products, so that maintenance can be done quickly onsite.



► Devices Designed To Be Intrinsically Safe

Getac's anti-explosive technology is built into the product and does not require an additional casing for operation in Zone 2 explosive atmospheres.

► Built to Survive

Getac ATEX products offers reliable operation in environments susceptible to drops, knocks and falls. Compared to alternative choices, Getac products are built to be rugged.

ATEX PRODUCT OVERVIEW : T800-EX, Z710-EX, PS336-EX, V100-EX2

These Getac products are equipped with Getac anti-explosive technology which can be operated under hazardous environment.

T800-EX

8.1" Fully Rugged Tablet with ATEX Certification

- ATEX Zone 2/22 \ II 3G Ex ic IIC T4 Gc \ II 3D Ex ic IIIB T130°C Dc
- Intel® Pentium® Processor N3530
- 600 nits LumiBond® display with Getac sunlight readable technology
- 1D/2D imager barcoder reader
- Optional SnapBack add-on: 2nd expanded battery



Z710-EX

The World's First ATEX Certified Fully Rugged 7" Android Tablet

- ATEX Zone 2/22 \ II 3G Ex ic IIC T5 Gc \ II 3D Ex ic IIIB T100°C Dc
- 7" LumiBond® Display with Getac QuadraClear® Sunlight Readable Technology and Glove-enabled Capacitive Touchscreen
- 6 Feet Drop and IP65 Certified
- Optional 1D / 2D Imager Barcode Reader and RFID
- Optional 3.5G WWAN for Data and Voice Communication.



PS336-EX

3.5" Fully Rugged Versatile Handheld with ATEX Certification

- ATEX Zone 2/22 \ II 3G Ex ic IIC T4 Gc \ II 3D Ex ic IIIB T130°C Dc
- 600 nits QuadraClear® Sunlight Readable Display
- SiRFstarIV™ High Sensitivity GPS
- Optional 3.5G WWAN (HSPA+ / UMTS / EDGE / GPRS / GSM)
- Optional FlexiConn™ 1D Barcode Reader / Long Range Bluetooth / 13.56 MHz RFID Reader



V100-EX2

10.4" Fully Rugged Convertible Notebook with Dual Notebook / Tablet Mode

- ATEX zone 2/22 \ II 3G Ex ic IIC T4 \ II 3D Ex ic D2 T130°C
- Intel® Core™ i7 vPro™ Processor
- 10.4" Getac QuadraClear® Sunlight Readable Display : 1200 Nits with Touchscreen
- Integrated SiRFstarIV™ High Sensitivity GPS and 3.5G WWAN
- Optional Dual Mode Touchscreen (multi-touch and digitizer)



Innovation without compromise



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