



## **ATEX Zone Certification - Intrinsically Safe (I-Safe) Specifications**

Many ruggedized mobile computers will include intrinsically safe (I-Safe) specifications or approval ratings. Understanding I-Safe approval ratings can be a difficult proposition for even the most informed customer. Intrinsically safe areas are hazardous environments where inflammable gases, vapours and liquids are stored and manufactured. These areas are prevalent in many of today's manufacturing facilities including chemical plants, paint manufacturers, oil refineries, textile mills, etc.

The term ATEX is derived from the French word ATmospheres EXplosibles.

Each designated hazardous environment has specific certification requirements for all equipment used in the I-Safe area. Intrinsically safe equipment must carry a label, which specifies the exact I-Safe rating for the equipment and the name of the NRTL (Nationally Recognized Testing Laboratory) who tested it. Testing laboratories have very stringent certification requirements that vary according to the level of I-Safe approval desired. Therefore, each intrinsically safe device is certified for different levels of I-Safe approval, and can only be used in specific hazardous environments. The bottom line is that close attention must be given to the specific I-Safe approval certification for each individual piece of equipment. Just because a device has an I-Safe rating, does not mean that the device can be used in any I-Safe area.

I-Safe approval certifications are made up of multiple classes, groups and divisions that correspond to the specific hazardous environment a device is approved to operate in. Each class consists of two divisions and certain classes have multiple groups. For example, Class I includes flammable gases, Class II includes flammable dust, and Class III includes flammable fibres.

**Explosive Atmosphere** - A mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapours, mists or dusts.

## **Intrinsically Safe (I-Safe) Specifications (ATEX Zone Certifications)**

Each class has two divisions. Division 1 includes environments where explosive material is present in the air at all times. Division 2 includes environments where explosive material is stored in sealed containers, and explosive material is only present for short time intervals (when a failure occurs or during maintenance). Also, Classes I and II are broken down into groups that correspond to the explosive properties of each specific material. For example, Group A includes Acetylene and Group E includes aluminum dust. In addition, I-Safe approval ratings differ significantly from country to country. A device that is I-Safe certified for use in the U.S. may not be certified in Europe.

In collaboration with the TÜV-Rheinland Group, Panasonic developed a special model of the Toughbook CF-19 - the first notebook, which conforms to the terms of the ATEX Directive.

This CF-19 model, for ATEX zone 2 and temperature category T3, is accredited as the only "convertible" fully ruggedized notebook worldwide.

## ATEX Hazardous Region Categories

### Equipment Group II Non-mining

#### Category I

Where explosive atmospheres are present continuously or for lengthy periods

#### Category II

Where explosive atmospheres are likely to occur

#### Category III

Where explosive atmospheres are likely to occur infrequently and be of short duration

### Equipment Group I mining

**Zone 0:** A place in which an explosive atmosphere consisting of a mixture of air and flammable substances (gas, vapor, or mist) is present continuously or for long periods or frequently.  
**Zone 20 (Dust):** 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.

**Zone 1:** A place in which an explosive atmosphere consisting of a mixture of air and flammable substances is likely to occur in normal operation occasionally.  
**Zone 21 (Dust):** A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur occasionally in normal operation.

**Zone 2:** A place in which an explosive atmosphere consisting of a mixture of air and flammable substances is not likely to occur in normal operation but, if it does occur, will persist for a short period only.  
**Zone 22 (Dust):** A place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but if it does occur, will persist for a short period only.

### Group II - Gasses

Group IIC  
(acetylene & hydrogen)

Group IIB  
(ethylene)

Group IIA  
(propane)

### Temperature Classes

T1	T2	T3	T4	T5	T6
450°C	300°C	200°C	130°C	100°C	85°C