

# What you need to know about Power Banks:

## Safety is the key to choosing the right Power Bank

The main component of a power bank is a lithium ion / lithium polymer battery. Although these types of batteries are commonly used, the safety of battery product is always the utmost concern. Power Bank safety can be addressed on two fronts:

1. **Battery Quality** Grade A is a general concept used to denote a very good quality battery. The real test is whether or not the battery has a UL Certification. Though all our power banks have many certifications, our most popular power bank batteries have passed the UL 1642 test which is a set of rigorous Electrical, Mechanical, Environmental, and Fire Exposure Tests. UL is the most widely accepted certification that denotes a battery's compliance with recognized safety requirements in North America.
2. **Protective Circuitry** The Protective Circuitry or PTC is considered a " Safety Valve". It protects the equipment, the charged device, and user. PTC prevents Internal and External Short Circuit, Abnormal Charge/Over Charge, forced Discharge, and more.

It's easy to reduce the costs of power banks by cutting out the cost of battery certifications and protective circuitry. But doing so creates a tangible risk to the safety of the power bank, the phone and other charged devices, and even harm the user. Before you purchase a power bank, talk to your supplier about their product safety certifications.

## How do I choose the right type of Power Bank for my customer?

The first step is to know what your customer's expectations are. In general, power banks can be categorized into three main types based on capacity and usage: Economy Class, Business Class, and Special Classes based on its capacities and usages.

1. **Economy Class:**
  - This category of power bank provides the lowest price point.
  - 2200 mAh is the most common capacity adapted by the industry, but the power banks in this class are typically under 3000mAh.
  - Economy Class power banks are ideal for charging phones on an emergency purpose. However, we do NOT recommend using this type of power bank with an iPad, tablet, or other devices that have higher capacity batteries.
  - Phone batteries industry wide vary in capacity. So, this type of power bank may NOT provide a full charge to a phone. However, it should provide at least 50% or more power to a completely power drained phone.
2. **Business Class:**
  - The Business Class Power Banks cost more compared to Emergency Class Power Banks.
  - The Capacity ranges from 3000 mAh to more than 10,000 mAh.

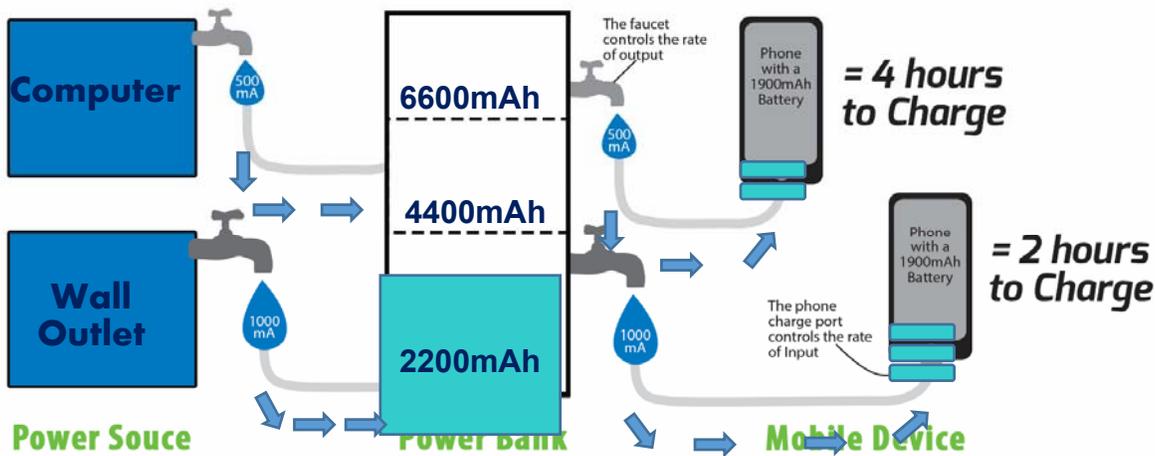
- Power banks in this class are able to charge phones and tablets. Many of them equipped with two ports, one for charging phone and other for Pad or Tablet.
  - Business Class Power Bank, in theory, can charge more than one device (one after another).
3. Special Class:
- Special Class Power Banks can not only charge a phone and iPad, but some models will be able to charge Tablet, Notebook computer, and even be able to start up the car when car battery is worn out.
  - Special Class Power Bank usually start at higher capacities and some models are tailored to specific market sectors.
  - Special Class Power Bank cost more compared to both Business Class and Emergency Class.

## What does Power Bank Capacity mean?

Power Bank capacity refers to how much charge is inside a power bank battery. It is measured in mAh or milliamps per hour. When a power bank is charging a phone, some of the charge is lost in the transfer of power. In simple terms, it takes energy to transfer energy. So, the real capacity is about 62.9% of the battery capacity listed on the outside of a Power Bank that has a high quality battery. For example, a Power Bank with a quality battery at 2200mAh has a real capacity of 1380mAh. 820mAh is lost in the transfer of energy. For Power Banks with downgraded batteries, the real capacity is lower because the battery may not work as efficiently. For example, a downgraded battery may show 2200 mAh on the case, but the real capacity is actually much less than 1380 mAh.

## Does a High Capacity Power Bank charge a phone faster than a Low Capacity Power Bank?

The simple answer is No. The charge speed is determined by output current, not the capacity. The output current ranges from 500mA, to more than 1000 mA (1A). If the output current stays the same, High Capacity and Lower Capacity Power Banks will charge a phone at the same rate. So theoretically, at the end of an hour, a phone will have as much charge with a High Capacity power bank as it will with a Lower Capacity Power Bank. A high capacity power bank will be able to provide more charge than a low capacity power bank over time. Business Class and Special Class Power Banks provide 1000 mA or larger output (up to 2 amps) and Economy Class Power Banks provide between 500 mA to 800 mA (up to 1amp). Most USB ports from your computer provide 500 mA (less than 1 amp).



## How many phones will a Power Bank be able to charge?

The simple answer is the Economy Class Power Banks can roughly fully charge one phone. Business Class Power Bank may be able to charge a couple of phones depending its capacity. The iPhone capacity ranges about 1450 mAh, Galaxy phones range from 1650 mAh to 2600 mAh. The iPad ranges 6600 mAh to 11620 mAh.

## Does a power bank work with both iPhone and Android phones?

Power banks do not contain software, so there is no need to worry about platform compatibility. That being said, it's important to consider what kind of device you want to charge when purchasing a power bank. Power banks meant to use with phones, may not be suitable to use in order to charge a tablet.

## Will KTI power banks charge phones and tablets?

The Economy Class Power Banks, we recommend for charging phones only. Business Class Power Banks can charge both phone and iPad. For capacity of higher than 10,000 mAh, the power bank should be able to charge both a phone and table in full. Special Class Power Banks vary in the devices they can charge. It ranges from charging a notebook / laptop computer all the way to charging your car battery.

## How long will it take to charge my phone or iPad?

It depends on the battery capacity of the power bank as well as the battery capacity of the device you are charging. No matter it's capacity all of KTI's power banks will deliver the same amount of charge to your device in 1 hour. So if you have two phones that are exactly the same. One is being charged by a 2200mAh power bank and the other is being charged by a 6600mAh power bank. Both will receive the same amount of charge at the end of an hour. The only difference is that the 2200mAh will have less charge left over than the 6600mAh power bank.

## How long will it take to charge the Power Bank itself?

The time of charging Power Bank is very based on its input current and capacity. Simply speaking, a 2200mAh power bank may take only 2-3 hours to charge, whereas a 6600mAh power bank may take 3-5 hours to charge. A power bank can be charged using a wall charger or a computer. The wall charger will charge the power bank at a faster rate than the computer. Computers have a smaller charging output.

## How many times can a power bank be cycled?

Depending on the class / capacity, the power bank can be cycled between 300 to 500 times. You may keep using the power bank but the capacity will be lower than the initial size. Be aware that it's important to store a power bank with at least a 50% charge. Storing a power bank without any charge may reduce the life of the battery.

## What kind of cable comes with the power bank?

Most of our power banks come with a simple USB cable that is only used to charge the power bank itself. Plug the USB side into your phone's wall charger or into a USB port of your computer and the Micro USB side into the power bank to begin charging.

## Do you carry a charging cable that can be used with my phone?

Most phones and tablets come with their own USB charging cable. We find it's not necessary to include it with the power bank, thereby eliminating the need to charge our customers for the additional accessories.

## What is the input port and output port/s?

The input port is used to charge the power bank. Usually it is a Micro USB connector.

The output port is used to charge your phone or mobile device. Usually it is a standard USB connector. Simply plug your device's charging cable (USB side) into the power bank to begin charging your phone or mobile device.

## One simple but important reminder.

To prolong the battery life, factories only charge battery at 30% to 40% of capacity. Please remind to your client to fully charge the power bank before usage. You may do the same before you demonstrate the usage or functions of the power bank to your client.

## How do I prolong the life of my power bank?

Avoid storing power banks in extreme heat or cold environments. Always store your power bank with at least a 50% charge to prolong the battery life. Storing while completely drained will reduce the capacity of the battery. Keep power banks out of reach from children. Do not drop, break, or attempt to disassemble a power bank. Internal components can be harmful if exposed to skin.

## Remember this procedure when you charge Power Bank via Car Charger

Avoid connecting a power bank to a car charger before starting the car. Many car chargers on the market may not be able to handle the sudden peak of output voltage during the vehicle ignition and it may damage the power bank.